General
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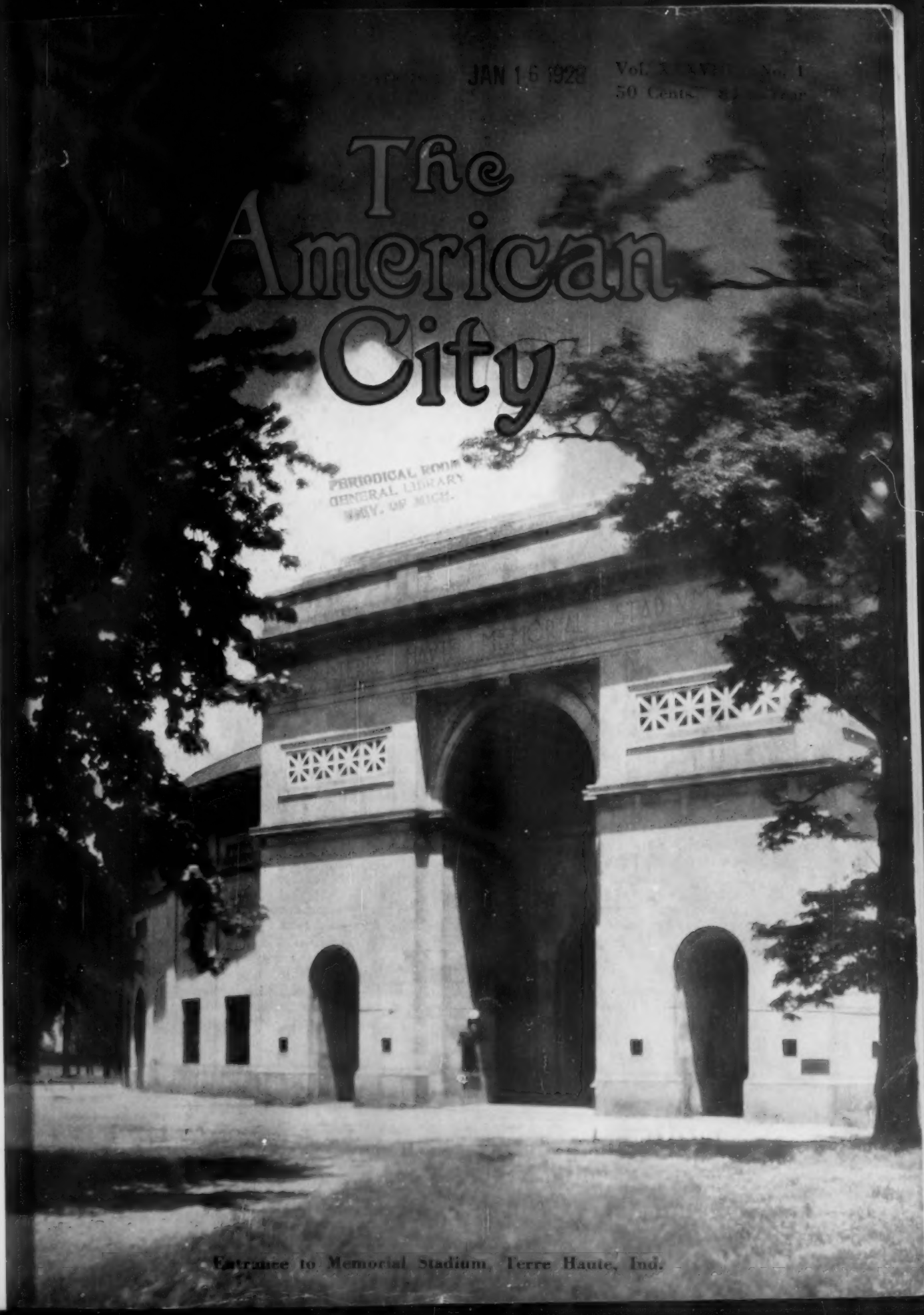

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Bigger — And, We Hope, Better

When the present issue is first opened, readers who have known THE AMERICAN CITY for part or all of the last eighteen years, may feel like one whose youthful friend has suddenly grown to manhood's estate. With the passing of the temporary feeling of unfamiliarity, we hope that the new suit of clothes and the greater openness of countenance may give the pleasure for which they have been designed. But, much more, it is our hope that the contents of the magazine may show a distinct advance over even recent high standards and that THE AMERICAN CITY of 1928 and future years may render to its influential clientele a service not merely generous in quantity, but of a quality so notable as to be a constant inspiration and aid to the highest type of municipal and civic leadership.

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The offices of THE AMERICAN CITY are headquarters for information on equipment for municipal work. If you want catalogs, prices or names of manufacturers, let us help you.

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Items and Abstracts for MAYORS AND CITY MANAGERS

Notable Progress in Long-Time Improvement Programs

THE recent voting by Dallas of $23,900,000, and by Oklahoma City of $10,329,000, for programs of public improvements, as reported in this issue, are notable examples of municipal development through long-time financing. Another important case in point was the voting in November by Cincinnati of bond issues totaling $8,688,000 for street improvements, playgrounds and other projects, and the approval in Alameda County, Calif., of a $26,000,000 bond issue to acquire a water distribution system for the nine cities in the Eastbay district.

In the present issue there is described also a unique proposal under consideration by the city of Trenton, N. J., for the carrying out of a city planning program over a 23-year period on the pay-as-you-go basis. Readers of THE AMERICAN CITY wishing to study the subject of long-time budgeting will find much of value in the article "Budgeting the City Plan by a Long-time Financial Program," on pages 311-312 in this magazine for September, 1927, and in the recommendations of C. E. Rightor, Chief Accountant of the Detroit Bureau of Governmental Research, as presented more fully in a recent monograph published by Municipal Administration Service, 261 Broadway, New York.

Woman Lord Mayor Personifies Social Service

IT is only an apparent paradox that Margaret Beavan, "little mother" of Liverpool's orphaned and crippled children, has become Lord Mayor of that city and one of the fourteen woman Lord Mayors of England and Wales. The position carries with it a social distinction, of which American life has no equivalent. The Lord Mayor, in a special sense, personifies the city. He receives its distinguished guests, and officially dispenses its hospitality. With his wife, he is social arbiter. If he has no wife, a sister, or daughter is usually appointed official Lady Mayoress. Miss Beaven announced, in assuming the chain of office, that she would combine both offices. In her brief speech, she said that election to her present high office was not, as formerly, a tribute to the individual but to the services which women have rendered to her city, one of the three largest seaports in the world,—once one of the most corrupt of cities, but now a leader in civic righteousness. A portrait of Lord Mayor Beavan will be found on page 111 of this issue.

Bureau of Municipal Research Director Appointed City Manager of Rochester

STEPHEN B. STORY, for six years Director of the Bureau of Municipal Research, of Rochester, N. Y., has been appointed city manager, under Rochester's new charter, at a salary of $20,000 a year. Appointment was made in November by the nine councilmen-elect and Mr. Story began immediately to organize departmental activities and to make formal selections of his associates in the new administration. January 2 marks the date of his becoming chief executive of the city. Official announcements made by Comptroller Joseph C. Wilson, councilman-at-large, emphasize that Mr. Story was the unanimous choice because of his wide experience in municipal affairs, his exceptional knowledge of the city manager plan, and his demonstrated ability as Director of the Bureau of Municipal Research, to obtain the cooperation of men and women for public service enterprises. Herein lies a suggestion as to the value of research bureaus as training schools for the city manager profession.

Three Angles of Planning

AS long ago as 1666, certain fundamentals of modern city design were incorporated into officially-submitted plans for the rebuilding of London after the great fire. What Parliament's too-great conservatism in taking action has cost the city would be painfully apparent (to Londoners) in a comparison of London's present-day map with that of some city of planned growth. (See page 116.)

The more scientific attitude towards a calamity was exemplified by Harland Bartholomew, city plan engineer of St. Louis, who was on hand when the recent tornado struck his city, to inspect the damage done and its relation to the city plan, and to say how the experience might be made to profit planners elsewhere, though "it was neither sufficiently widespread nor so located as to be of great significance" in materially furthering the large St. Louis redesign schemes on hand. (See page 114.)

Failure to plan is the cardinal sin, then; but there are corresponding sins on the side of ill-advised and over-zealous planning, and of these Jacob L. Crane, Jr., has designed a decalogue of "Errors to Be Avoided," which begins on page 145.

Not only the broad phases of street layout and public open spaces are the concern of the modern city planner; he is also studying with increasing care problems of congestion on private land. This phase of the subject is discussed in the present issue by John Taylor Boyd, Jr., with special reference to the place of the apartment house in the scheme of modern city life. This third of his series on land economics begins on page 107.

Debt Retirement Under City-Manager Plan

THE City of Tallahassee, Fla., began city-manager government in 1920. Up to that time not one cent had ever been placed in a sinking-fund to retire the bonded debt, which then amounted to approximately $400,000.

In a recent letter to THE AMERICAN CITY, B. H. Bridges, City Auditor-Clerk of Tallahassee, encloses a circular giving evidence in a very concrete form of the financial progress made under the commission-manager plan. This circular states that funds are now available in the city treasury to purchase the entire list of bonds still outstanding.

This notable achievement has been made possible by the setting aside, during the period since the adoption of the new form of government, of sinking-funds adequate to provide for the retirement of every bond issued by the city.

Utopias Are Often the Ladders on Which We Climb to Reality

THE skill of the engineer and architect will always remain the prevailing and technical medium through which the knowledge, experience and idealism demanded by city planning and city building of the future will find their realization. . . . . There are, however, fields of endeavor that attempt to broaden, humanize and spiritualize city building. . . .

The sculptor, the painter, the poet, the novelist, the psychologist, the economist, the political scientist, and the sociologist, all in their own fields, have important contributions to make in guiding the destinies of the city of the present and in creating the vision and inspiration of the building of the cities and towns of the future.

We shall never know how to deal with our cities unless we understand how the cities are dealing with us as physical and spiritual beings. The poetry and romance of the community in which we live may be more potent factors in creating a high order of local and national patriotism than can be attributed to an efficient street-car service or a low tax rate. The magic of one stanza may change our whole outlook upon our community and our relation to its well-being. One magnificent piece of statuary may give new inspiration to the man who lives and works in the monotonous canyon-like streets of a great metropolis. One beautiful structure may raise new hopes in the hearts of those whose souls are languishing for want of relief from the drabness of the average city. One glimpse into a Utopian dream of a community of the future may create new leadership in dealing with the sordid social and economic problem of every-day community existence.

—From Vol. 1, No. 1, of THE COMMUNITY BUILDER, published December, 1927, at 825 Union League Building, Los Angeles, Calif.

Answers to These Questions

will be found on the pages indicated:

HOW does a realtor reimburse himself for a half-million-dollar gift of land to a city? (153)

WHAT city has the most ingeniously financed traffic marking system? (211)

WHAT ownership is best for municipal landing fields? (117)

STRAIGHT LINE METHODS APPLIED TO PHYSICAL TESTING MACHINES

Many centuries ago a worthy old Greek philosopher enunciated the theorem that a straight line is the shortest distance between two points———————

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Items and Abstracts for ENGINEERING AND HIGHWAY DEPARTMENTS

Maintenance Costs Would Carry Bonds

HOW many counties are there in the United States whose road maintenance costs are mounting each year because the road surfaces are inadequate for modern traffic? An excellent example of a county in this unfortunate condition is given in the article by N. T. Veatch, Jr., consulting engineer, Kansas City, Mo., appearing in this issue. He shows that Jackson County, Mo., in which Kansas City is located, is now spending annually on the repair of roads nearly three times as much as would be the interest on a bond issue of $6,500,000 for a system of permanent roads. Other counties facing this condition will do well to study this article and apply its general findings to local conditions.

Unwelcome Snow

THE poet sings sweetly of "beautiful snow," but the thoughts and language of the municipal official in charge of snow removal are unprintable when his organization fails him at the time of a heavy storm. A. M. Soby and J. H. Nuttall, Chief and Principal Assistant, Bureau of Street Cleaning, Philadelphia, have prepared the article appearing in this issue describing in detail the snow-removal problems as applied to Philadelphia, and give an excellent outline of the method of organizing city forces and contract labor to handle this work effectively. Forms, identification checks, and illustrations of equipment make the article a fruitful source of study for municipal engineers. A general article on street cleaning by these same authors appears in the 1928 Municipal Index.

Short Cuts to Bad Streets

PROBABLY the quickest way a brand-new concrete or bituminous street in any city can be spoiled is through cutting the pavement for the installation of various utility services such as water, gas, electricity and sewers. Unless great care and diligence are shown in the initial cutting of the pavement and then in tamping the backfill and replacing the foundation and surface courses, trouble is bound to result. How the licensing of utilities and municipal and public service corporations is handled in various cities and how pavement is replaced are told in this issue in the extensive street paving symposium covering nine of the larger cities of the United States.

City Streets Worst Part of State Highways

A LAMENTABLE condition of roads is almost always found when a motorist leaves a state highway and enters the corporate limits of a city. The boundary line is marked by the beginning of pits and bumps in the roadway. Furthermore, it is almost an impossibility for the motorist who is trying to follow a state highway route to keep to that route through a strange city, because of poor marking. A recent legislative act in Kansas is expected to remedy these two difficulties. The sum of $250 per mile per year is to be paid by the state to each city for the maintenance of streets included in the state highway system through the corporate limits. Some cities are using this money to maintain the roads in better condition, and other cities whose streets are in good condition are using these funds to better mark the route of the state highway through the city—an excellent idea which might well be copied by other states and cities.

Race-Track Improves Roads for Motorists

LOGAN COUNTY, Pa., boasts the famous Altoona race-track, to which thousands of enthusiasts flock whenever races are scheduled. This makes a severe demand on the roadways of Logan County, particularly those leading directly from Altoona out to the track. The officials are not dismayed by this, but have installed a very efficient plant for producing limestone and tar mix which is used for patching and surfacing this road and maintaining it in the best of condition. An article in this issue describes the plant and tells particularly of one rush job which was put through successfully with a 50 per cent overload on the plant.

Incineration Costs in a Small Town

THE rapidity with which the smaller communities are taking up incineration as a means of disposing of municipal refuse, including garbage and rubbish, is amazing. This isue of THE AMERICAN CITY contains an article describing the U. S. Standard incinerator which was installed last year in the borough of Highlands, N. J., which has a population of about 2,000 people for nine months of the year and a summer population of about 10,000. The article shows that the tests gave efficiencies beyond the guarantee required by the borough, and gives cost data on actual expense of operation during a rather trying period. Costs are also given on collection, covering labor and truck operation. It is interesting to note that the cost of this incinerator to the taxpayers is less than 50 cents per $1,000 of assessed value. The job was let March 9, 1927, work began March 26, 1927, and the first load of garbage was burned June 2, 1927.

Who's Who Among Highway Officials

THE lists of state, county and city highway officials which will make up a considerable portion of the street and highway construction and maintenance section of the 1928 MUNICIPAL INDEX is a veritable Who's Who in highway work. The lists of state highway engineering department officials include the chief engineer of the state highway department, his various deputies in construction and maintenance and bridge work, and the district engineers. Following this is a list of county engineers, and then a list of city engineers in cities of over 10,000 population, and data on paving in these cities. Municipal officials throughout the country will find these lists of officials of great value when corresponding with other communities, and also will find the statistics on city paving of interest and help in their own work.

Unloading Without Dump Bodies Made Easy

OUT in Berkeley, Calif., the Sanitation Department has devised a scheme for unloading garbage trucks at the dump by means of a heavy chain which extends along the floor of the truck and protrudes at the rear. This is fastened to a gate constructed of heavy wood which is placed at the front end of the empty truck body. When the truck reaches the dump, a tractor hitches to the chain and pulls the gate out with the garbage ahead of it. We have recently heard of a somewhat similar scheme being used in trucks hauling hot mix for pavements, except that in this case, a heavy piece of canvas the width of the truck was laid over the front end of the truck and then down to the floor of the truck and back about a foot. The truck driver holds onto the canvas while the truck is being loaded and again when the dump body is tipped. This prevents the canvas from going out, or, if the driver is not diligent and the canvas does go out, it is easily retrieved. This gives a quick, clean dump. A similar scheme may be used with portland cement concrete.

Seattle Engineer Studies European Streets

THE results of the interesting studies of W. H. Tiedeman, Assistant City Engineer, Seattle, Wash., made during his tour of European countries this last summer are summarized in his article which begins in this issue of THE AMERICAN CITY. Seattle, Wash., is one of the wide-awake cities of the Pacific Coast and is endeavoring by every means to improve its streets and better its traffic situation. Mr. Tiedeman's studies cover widths of thoroughfare, and the illustrations show the comparative sections of the more prominent boulevards and highways in the United States and Europe. He also gives data on construction and a wealth of illustrations to bring out the various points in his paper. This article was prepared specially for publication in THE AMERICAN CITY MAGAZINE by Mr. Tiedeman on his return from Europe.

1½ Years Later the Engineer in Charge* Says —

"THE tank has been in service since June, 1926. It has proved exceptionally satisfactory in that we have been able to maintain a uniform pumping rate at the pumping station with uniform pressure throughout the twenty-four hours, and since its installation it has been called upon a number of times to supply service on which, under the old existing conditions, we would have been very much handicapped. Twice this condition was occasioned by heavy demand for fire purposes when there was probably a demand of six to seven million gallons per day over and above the normal consumption; and with the tank in service the lowering of the pressure on the city mains amounted to only a few pounds, not exceeding ten at the maximum, whereas with the Holly or direct system it would have required a minimum of at least ten to fifteen minutes to have met this demand and the hazards incident thereto. We have been able to make repairs to our valves in the 24-inch pumping main during ordinary periods of the day without interrupting the service to the city. Heretofore we have had to inconvenience the consumers and do this kind of work at night and on Sundays. We have had no less than two breaks in our distribution system that would have seriously affected the pressure and the demand on the pumping station had not our tank been in use."

** James E. Gibson, Manager and Engineer Charleston, S. C., Water Department and President American Water Works Association, in a paper read before the annual conventionof the New England Water Works Association.*

CONCLUSIONS

"Our conclusions after one and one-half years of experience and operation of the tank are that elevated tanks offer a most useful service in any water distribution system, and if properly designed and located will relieve the distribution system and mains of excessive pressures and supplement them in every way. In old systems, the necessity of replacing small mains by larger mains can be materially delayed. The life of small mains can be materially increased by the strategic location of elevated tanks, and the heavy costs of replacement with larger mains under improved pavement conditions materially deferred. By proper treatment, parking, painting and planting of shrubs and trees, these tanks can be camouflaged and add sightliness and beauty to a community. We believe that as the many advantages of elevated tanks and standpipes are better understood they will come more and more into use in our water-supply systems."

2,000,000 gallons for municipal supply
AT Charleston, S. C., when water was distributed by direct pressure, the heavy intermittent industrial demand necessitated speeding up the pumps to a degree that caused excessive loss of head in the supply mains leading into the city.
Investigation showed that 2,000,000 gallons, stored at 120 feet above ground level near the center of distribution in the city, would give virtually a gravity supply at 40 pounds pressure. And it would reduce pump operating costs by maintaining constant speed and pressure conditions. The city decided to install a Horton elevated tank.
This Horton ellipsoidal-bottom elevated tank required foundation footings slightly over half the spread of those required by a standpipe of the same height—a considerable saving, and a safer loading of the soil at the tank site.
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Advertisement in "American City" August 1926.

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San Francisco. 1033 Rialto Bldg.
Havana, Cuba. Apartado 2507

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Items and Abstracts on WATER AND SEWERAGE

Pure Water Must Be Paid For

PURE water has a real cash value, according to R. E. McDonnell, consulting engineer, Kansas City, Mo., in his article in this issue. He calls attention to the fact that pure water helps a city to grow and that both small towns and large cities have spent enormous funds for pure water, varying from $100 per capita in Canon City, Colo., with 6,000 population, to $125 in Flagstaff, Ariz. The sanitary standards have been raised, typhoid rates reduced from the alarming figures of 30 per 100,000 to 2 per 100,000—but to do this and to maintain the high purity and quality of water now demanded, adequate rates must be secured. Attention is also called to the responsibility of city water departments and water companies for impure water. Courts have held that under the statute conferring the right to establish public water-works and to supply water to the inhabitants of a city, there is an implied responsibility on city and water company officials to furnish water in a pure and wholesome condition and to exercise reasonable care in the inspection of the supply that they may know at all times what the condition of the water is.

Chinese Wars Do Not Affect Water-Works

IN SPITE of the ever-present danger of the continuous procession of Chinese rebellions and civil wars, construction has been going on at Tientsin to insure a supply of pure water for the British and ex-German concessions, where most of the Americans live. An interesting article in this issue tells of the methods employed to secure the supply and describes the plant and its operation. American machinery was used to build the plant, and American machinery operates it.

A Convention Novelty

IT REMAINED for the California Section of the American Water Works Association to stage one of the most novel educational exhibits that have ever been attempted at a section meeting or annual convention of the Association. Through the cooperation of Louis L. Farrell, Superintendent, East Bay Water Co., Oakland, Calif., sample taps, services and unique methods of installing gate-valves in more economical ways were demonstrated before the eyes of the convention delegates. In addition to this, on a plot near the convention hall were located some fifteen samples of the work of the field staff of the East Bay Water Co. in making taps and other connections. Photographs of the exhibit appear in this issue. Here is a hint for other sections and for ambitious superintendents who wish to demonstrate their keenness in developing new methods.

Massachusetts' First Mechanical Filtration Plant

FIVE years ago the Water Department of Cambridge, Mass., began the operation of the Cambridge rapid sand filtration plant operated at Fresh Pond. This was the first rapid sand filtration plant in Massachusetts and is still the only municipal one in operation in that state. There is one industrial plant now used of larger capacity. This plant is served by a typical New England water, with difficulties from color, low alkalinity and algae. The article by Prof. M. C. Whipple and H. C. Chandler, Supervising Chemist and Chemist of the Filtration Plant, respectively, in this issue, gives an interesting account of the difficulties of operation which have been overcome by careful study and adjustments in the plant with a minimum of reconstruction.

Sources of Pollution

THE 1928 MUNICIPAL INDEX, which will be published early this year, contains in a section devoted to the subject of water-supply and purification a valuable article, "Sanitary Hazards—Source to Consumer," by E. Sherman Chase, formerly of the New York State Department of Health and now of the firm of Metcalf and Eddy, Consulting Engineers, Boston, Mass. Mr. Chase's wide experience in the field of water-supply investigation makes him an admirable author of such a paper. He describes every conceivable source of pollution or contamination of a water-supply from the time the pure drop of rain water reaches the earth until it comes forth from the faucet of the consumer. This will be a truly worthwhile article for superintendents of water-works to read and study carefully in order that they may eliminate as far as possible every one of these major and minor "sore spots" which might cause a water-borne epidemic in their communities. As in the case of the old personnel records in war days whereby officers were rated by their superiors, the water-works superintendent can find a rating for his water-supply by checking off the various weak points which he feels positive do not exist in his system. This is not essentially a scoring system such as has been devised and sponsored by Mr. Chase, but is a purely expository article describing the different weak points.

In addition to Mr. Chase's article, there will be a list of water-works superintendents in communities over 10,000 population in the United States.

Texas Water-Works Short School

HOUSTON, TEX., from January 23 to 27, will be the scene of the tenth annual Water-Works Short School. It is under the auspices of the State Department of Health, the Texas section of the Southwest Waterworks Association, and the City of Houston. This is a valuable opportunity for public officials, consultants, health workers, sanitarians and teachers interested in the betterment of water supplies, sewage disposal and stream pollution.

Sewage Plants to be Odorless

THE new sewage plant recently built in Holland, Mich., is to be located near a main north-and-south highway and in close proximity to habitations and industrial buildings. It therefore became important to design and operate the plant in a manner that would cause a minimum of odor. The treatment determined upon comprises Imhoff tanks with appurtenances, and chlorination, the latter being applied during the summer season only. While this treatment will not yield a non-putrescible effluent, it is believed that in the absence of other pollution and a good dispersion of the clarified effluent in the upper end of a lake about five miles long and one-half mile wide, no visible nuisance or bad odors will result. Later, however, more complete purification, such as is effected by trickling filters, may be necessary. The initial plans are so drawn that this additional purification can be effected with the minimum of construction at a later date. All sewage is pumped after passing through screen chamber and Venturi meter. This was necessary because gravity flow does not reach the plant.

Sewers Are Essential

IT is surprising the number of communities in the United States that are still without sewers. As a means of preserving the health of the community and transporting rapidly putrescible and odoriferous material from the heart of the community to some point where it may be safely treated, the subject of sewers should receive the consideration of every unsewered community. For the 1928 MUNICIPAL INDEX George W. Fuller, consulting engineer, New York, one of the outstanding figures in the sewerage field, has prepared a particularly educational article under the title "Sewers and Sewerage Systems," which takes up the need for sewers in communities at present unsewered. This is not a scarehead story, but rather a rational discussion of this very important topic.

"The art of sewage treatment has progressed in recent years, partly in apparatus or design, but more particularly in knowledge of control of processes." This is quoted from the article on sewage treatment appearing in the 1928 MUNICIPAL INDEX by Langdon Pearse, Sanitary Engineer, Sanitary District of Chicago, and also a member of the firm of Pearse, Greeley and Hansen, consulting sanitary engineers, Chicago. In this article Mr. Pearse takes up each method of sewage treatment and improvements which have been made upon them in the past year or two. He discusses the need for cleaner streams. Separate sludge digestion covered sludge drying beds, Imhoff tanks, odor control, and activated sludge are among the other specific topics discussed.

Floods Again!

WIDE WORLD PHOTO

THE RAGING CONNECTICUT RIVER—NOV. 1927—BELLOWS FALLS, VT.

—Are YOU Ready?

AGAIN a calamitous flood—this time in New England—an area notably free from flood conditions heretofore. Unprecedented rains, continuing hour after hour, swelled brooks to rivers, rivers to torrents sweeping everything before them.

Again the inescapable pollution of water supplies and the consequent dread of typhoid fever and pestilential disease.

Again the call for help—the emergency dispatch on a Sunday evening (seven hours after the call had been received) of a truck load of chlorinators and chlorine and an auto full of our engineers, on an errand of mercy—to combat the germs of disease. A wild, all night ride through driving snow—almost impassable detours because of washed out bridges and demolished roads. A week of herculean effort installing chlorinators, sterilizing water supplies, disinfecting mains, making water safe to drink.

And again we ask————

"WHY WAIT FOR THE FLOOD?"

————Any water supply anywhere is liable to such unforeseen pollution as came to New England—as it came to the Mississippi Valley—and as it has come hundreds of times to thousands of places heretofore. To protect against this unexpected pollution, every water supply should be chlorinated regardless of its source.

Chlorination costs but one cent per capita per year. It is the cheapest public health insurance—and the time to provide for chlorination is before the emergency comes.

"The only safe water is a sterilized water"

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WHO'S WHO IN WATER SUPPLY

Installment No. 1—Portraits of Water-Works Officials in Fourteen Cities of Wisconsin

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Superintendent of Water Works, Milwaukee
(Appointed 1911)

E. E. SMITH
Manager, Water Department, Racine
(Appointed 1926)

P. J. HURTGEN
Director of Public Works, Kenosha
(Appointed 1917)

LEON A. SMITH
Superintendent of Water Works, Madison
(Appointed 1917)

JAMES CHURCH
Superintendent of Water Works, Green Bay
(Appointed 1917)

ALBERT E. HINTZ
Secretary, Water Department, Oshkosh
Appinted 1922)

LOUIS P. PEEKE,
Superintendent of Water Works, Fond du Lac
(Appointed 1924)

GEORGE MARVIN
Superintendent of Water Works, Marshfield
(Appointed 1924)

JOHN H. KUESTER
Superintendent of Water Works, Menasha
(Appointed 1912)

CHARLES G. GRAU
City Manager, Rhinelander
(Appointed 1925)

A. G. LEITCH
General Superintendent, Municipal Light and Water Department, Richland Center
(Appointed 1924)

P. H. PRESSENTIN
Superintendent of Water Works, Shorewood
(Appointed 1924)

F. H. ROOB
Manager, Water Department, Columbus
(Appointed 1914)

EDWIN S. CARY
Superintendent, Water and Light Department, Evansville
(Appointed 1906)

in { a large park / a large school / a large residence / a large tenement / a large home / a large camp / a large city } *or a small one*

Any place-large or small-
where people gather or live-

PLAYGROUND **EverWear** APPARATUS
(STANDARD SIZE AND STANDARD FOR QUALITY SINCE 1907)

&

PLAYGROUND **EverWear Junior** APPARATUS
(SMALL IN SIZE. A NEW 1928 LINE OF EVERWEAR EQUIPMENT)

Write for Catalog No. 20 or No. 20-A, the latter for "Junior" outfits

The Everwear Manufacturing Co.
SPRINGFIELD OHIO

Mention THE AMERICAN CITY—it helps.

Items and Abstracts for PARK AND PLAYGROUND DEPARTMENTS

Pie Cutting or Cheese Paring in Budgets for Public Recreation

THE man who holds the pie knife, and who by the way prefers paring cheese to cutting pie, avers that we have too many parks, too much park and playground system to maintain, that necessities come ahead of luxuries and so forth. I will grant that he is right if he will admit that there is virtue in a counterbalance to relieve the preventable unrest in our cities resulting from too much congestion, too much over and under regulation, too much of narrowness in workaday life. And then I should like to marshal the arguments to demonstrate to him that a reasonably well schemed system of play grounds and parks will cause a net reduction in taxes in any live city, by improving public well being and building contentment, by increasing prosperity through a happier people, and by creating realty values on which to levy easier taxes.

—From an address by C. P. Keyser, Superintendent of Parks, Portland, Ore., before the 1927 Convention of the American Institute of Park Executives.

Two-Reel Film, "Playtime," Is a Plea for More Recreational Opportunities in Cities

"BOY Seeking Thrill in 'Gas' Fire Dies of Burns," "Truck Kills Child Near Bronx School," "Children's Deaths in Streets Rising," "Agencies Act to Bar Boy Crimes." These are headlines from New York newspapers. Almost any large American city can match them. The problem back of them is one of fundamental importance—these fatal accidents to children, children permanently disabled, rendered permanently unhappy, becoming a growing menace to society at large. Parents, teachers, taxpayers, builders, city officials, humanitarians, legislators, must all bear a part of the responsibility for its solution. And an important factor in this solution, we can no longer doubt, is the provision of more and better and safer play places to be available more hours daily.

Feeling these facts keenly, the Women's City Club of New York has just had a two-reel motion picture made telling graphically what happens to youngsters with nowhere to go. The club was aided in the preparation of the picture by the Board of Education in New York City, which is in charge of school playgrounds, and the Department of Parks, which has control of municipal playgrounds. "Playtime," as the film is called, tells a dramatically human little story of Tommy and Ruth Dugan, who have come to the great city from a small town and who find city sidewalks, doorways, and neighborhood ice-cream parlors and dirty vacant lots unsatisfactory play places. They wander into strange and perilous adventures in which Ruth's doll dies tragically, and Tommy is all but asphyxiated in a factory fire. The picture is frank propaganda for more play places—propaganda needed in most American cities. It has been turned over to the Pathe Exchange for distribution after January 15, and can be ordered by any local theater, club, or individual at a rental of $10 per day, or in a special Pathe program at varying prices. The Women's City Club, 22 Park Avenue, New York, will supply particulars.

Did Santa Claus Come?

A FEW items which the 1928 program of most cities might include had Santa Claus been able to answer all the letters devoted to the needs of the children. The cartoon is reproduced from the cover of the *New York City Club Bulletin* for December, but, substantially, covers the case in a good many other cities. To illustrate, one item and one city will serve: the instance of boys haled into police court for stealing bananas from a box car, before the opening of a neighborhood playground; the same boys, given the special attention of the recreation director, becoming before the end of the first season dependable playground assistants.

News from the Recreation World

HIGHLIGHT news items gleaned from *The Playground* (December, 1927 issue), include an account of playgrounds of Woonsocket, R. I., being operated as municipalities in miniature with keen competition among youthful aspirants to office. Also the following: Auburn, N. Y., has opened a new recreation building for colored citizens,—the Booker T. Washington Community Center. A Fun Festival, staged annually by business men in Salamonia, Ind., has become one of the outstanding community events of the year. Governor Zimmerman, of Wisconsin, has signed a bill permitting a tax levy in any city, town, or village for financing town bands. An eight-acre tract of land adjoining the Bird Sanctuary at Cohasset, Mass., has been donated in perpetuity as a country club for New England birds. A winter sports carnival is an annual event at Claremont, N. H.; and Claremont has a portable toboggan slide built at a cost of $525.

The Billboard and the Waterfall

IN court decisions on zoning heretofore there is only the beginning of a disposition to permit purely esthetic considerations as matters of general welfare, but there is the beginning of such a principle. As public opinion grows, there will be a stronger and stronger recognition that there is as real a right to protection of the amenities in reference to vision as there is in reference to order or sound. Surely a painted advertisement, however well done, is as much a public nuisance when placed squarely before a waterfall or beside a parkway as would be the effluvia of a soap works or the clang of a boiler factory.

—*National Real Estate Journal.*

Parks Pay

IT is now a recognized axiom of modern real estate practice that open areas pay. A conspicuous instance is on record as regards Madison (Wisconsin) Park and Pleasure Drive Association. The average gain in value in Madison was found to be at least one hundred per cent. Similar conditions resulted in the neighborhood adjacent to Keney Park, in Hartford, Connecticut.

—JOHN NOLEN, in "New Towns for Old."

Permissive Legislation for Town Bands

"ANY city, town or village in the state may levy a one mill tax to organize, maintain or hire a band." This is the provision in a bill signed by Governor Zimmerman, of Wisconsin. And Wisconsin is not the only state which has given overt recognition to the value of the town band. Other states having permissive legislation of a similar nature include Iowa, Illinois, Idaho, Kansas, California, Maryland, Michigan, Montana, South Dakota, Texas, Indiana, West Virginia, Mississippi, New Hampshire, Pennsylvania, New Jersey, Ohio, South Carolina, Utah and Vermont.

—*Playground.*

Answer to These Questions

will be found on the pages indicated:

WHAT "job of work" did the Prince of Wales recently undertake for his brother? (139)

WHERE is the recreational center of the Wabash valley in Indiana? (144)

PROGRESS
In Municipal Administration
Calls for Voting Machines

Send today for illustrated, descriptive pamphlets.

SIMPLER than the old-fashioned paper ballot, as accurate as the comptometer in a bank, and economical, the voting-machine is being used more and more by progressive communities at all elections---local, state-wide and national---primary, special and general.

Complete secrecy is assured. Careless or illiterate voters *cannot spoil* their ballots. The results of an election are known as soon as the polls have closed. There is a permanent record of the vote. And economies can be effected which will pay for the machines in a short time.

Your city and county can employ this modern method of voting just as 1800 other communities are using it---from Connecticut to California.

AUTOMATIC REGISTERING MACHINE CO., Inc.
JAMESTOWN NEW YORK

Items and Abstracts for FINANCE AND LEGAL DEPARTMENTS

Right of Municipality to Sell Gasoline Upheld

THAT the sale of gasoline and oil by a municipality does not constitute a violation of the "due process of law" requirement of the Fourteenth Amendment to the Constitution, the Supreme Court of the United States decided on December 5, 1927.

The action of the Court was taken in No. 91, the Standard Oil Co. v. City of Lincoln (Nebr.) et al., in which the findings of the Supreme Court of Nebraska (summarized in THE AMERICAN CITY for November, 1927, page 623) were affirmed.

The petitioners had asked the Court to decide that the supplying of gasoline and oil is not a public utility and outside of the field of public utilities and business affected with public interest, and that governmental agencies may engage in supplying essential commodities through publicly owned agencies only if peculiar conditions exist rendering it impossible or difficult for the individual citizen to obtain a supply for himself in the absence of such governmental agency.

As reported in the *United States Daily* for December 6, the Supreme Court of the United States, without a written opinion, disposed of the case on authority of decisions in Jones v. City of Portland, 245 U. S. 217, and Green v. Frazier, 253 U. S. 233.

The decisions in the two cases cited held that a public market can be established for the sale by governmental agency of an essential commodity where the market is owned by the public in its entirety. The Court upheld the contention of the Lincoln authorities, who appeared as defendants in error to the petition of the Standard Oil Co., a contention which was that the establishment of a public market for the sale of gasoline and oil by the municipality to its inhabitants, at cost, where the market in its entirety is owned by the public, is a public use and sufficient in law to sustain legislation.

Here Are the Missing Figures from San Diego and Stockton

IN THE AMERICAN CITY for October, November and December, 1927, there were published financial statistics of all cities of over 30,000 population for the year 1926, with the exception of San Diego and Stockton, Calif., for which final data had not been received by the Bureau of the Census up to the time of going to press with these tables. The missing figures are now available and are given below.

	San Diego			Stockton		
	Amount	Per Capita	Per Cent of Total	Amount	Per Capita	Per Cent of Total
All general departments	$4,235,046	$38.50		$1,836,968	$37.80	
General government	300,437	2.73	7.1	156,125	3.21	8.5
Protection to person and property	712,022	6.47	16.8	369,541	7.60	20.1
Conservation of health	95,713	0.87	2.3	300	0.01	*
Sanitation	279,013	2.54	6.6	123,123	2.53	6.7
Highways	353,034	3.21	8.3	130,258	2.68	7.1
Charities, hospitals and corrections	18,499	0.17	0.4	13,868	0.29	0.8
Schools	2,058,600	18.71	48.6	847,750	17.44	46.1
Libraries	78,078	0.71	1.8	38,711	0.80	2.1
Recreation	281,342	2.56	6.6	93,693	1.93	5.1
Miscellaneous	58,308	0.53	1.4	53,599	1.31	3.5

* Less than one-twentieth of 1 per cent.

	San Diego	Stockton
Net debt		
Total	$15,209,983.00	$4,220,572.00
Per capita	138.27	86.54
Per capita assessed valuation for city government	1,147.81	1,337.07
Per capita levy for all purposes	58.78	49.99
Per capita levy for government of city	38.31	33.68
Estimated population	110,000	48,600

Federal Court Upholds I. C. C. on Valuation

AN important decision was handed down on December 10 in a valuation case which is being watched with great interest by students of the public utility situation in cities, as its outcome is expected to affect utilities in cities profoundly, as well as the railroads. On that day a special Federal court—Judges Stone and Van Valkenburgh of the Circuit Court of Appeals and Judge Faris of District Court—rendered a decision in favor of the Interstate Commerce Commission, in the St. Louis & O'Fallon Railway case (referred to in THE AMERICAN CITY for July, 1927, on page 40). This is the first case where the Commission's railroad valuations have involved the immediate financial interest of a railroad, so that the Supreme Court will have to pass on the valuation procedure.

The O'Fallon case calls for a payment by the railroad to the government under the clause of the Transportation Act requiring the recapture of excess earnings, as based on valuation; and while the amount in this case is relatively small, it precipitates the valuation question for all the roads. The case has therefore been called the greatest suit in history, involving an amount running into eleven figures. The Commission had found a valuation approximating the prudent investment, as against present-day reproduction prices as demanded by the railroad.

The Federal court opinion as written by Judge Stone is stated not to discuss valuation methods, but the separate opinion of Judge Faris goes into this question extensively, and while the Commission's finding of value is upheld as reached "in the only way possible in a situation so difficult as that," his remarks include the statement that price levels over a term of years both preceding and following the valuation should be considered. Counsel for the railroad are reported to believe that Judge Faris' opinion provides ground for an appeal, which will be taken to the Supreme Court.

Growth of the Biggest City Budget in the World

THE adoption by the Board of Estimate and Apportionment and the Board of Alderman of the city of New York of a budget for 1928 aggregating about $1,400,000 per day, gives interest to the following tabulation of the city's budget totals for the last ten years, compiled from the records of Budget Director Charles L. Kohler:

Year	Amount
1919	$248,025,434.88
1920	273,689,485.13
1921	345,571,399.77
1922	350,237,435.53
1923	353,350,975.67
1924	375,468,000.08
1925	398,954,228.29
1926	437,000,000.00
1927	474,893,300.00
1928	512,528,831.49

The 1928 figure has, in conformity with a court order, been reduced, at least temporarily, by the removal of an item of $13,000,000 for partial amortization of short-term subway construction bonds to be issued.

There's Nothing New in Special Assessments

THE principle was applied in England as far back as 1427 when certain acts provided for apportioning among landowners benefited therefrom, costs involved in construction and repair of walks, ditches, bridges, etc., that had been damaged by the inundation of the sea. The notion was presented in the United States as early as 1658, when a public way was laid out by the general court of the colony of Massachusetts Bay, and power given to impose the cost on "all such of Boston or other towns as shall have benefit of such way."

HON. H. F. LONG,
Commissioner of Corporation and Taxation, Massachusetts.

Answers to These Questions

will be found on the pages indicated:

WHAT municipality has voted a conspicuously large single bond issue within recent months? (175)

HOW many official departments have authority to exercise control over a city's expenditures? (173)

MAY a state league of municipalities carry on a campaign for reforming laws of another state? (174)

The Plague of "65"

OVER London's high Tudor roofs and narrow cobbled ways Pestilence hung. A little while before, Haymarket, Fleet Street and the Strand were gay with laughter, and bright with throngs of mincing bloods. Now the rumble of the burial carts rolled echoing through the empty streets. The court, the gentry and all who could had fled. *Black Death* held sway.

It was bubonic plague that swept the towered English town and claimed its hundred thousand souls—bubonic plague, the carriers of which were rats.

With the utter neglect of sanitation of long ago it is a miracle the race survived. Refuse and garbage bred epidemics on every hand.

Those things are impossible in the American city of today, so close is our supervision—yet there is still work to be done—there are still antiquated methods holding on—there are still cities that have not adopted sanitary reduction or incineration; for such reduction or destruction by fire are the only safe, sure, offenseless ways of disposal. Let our Sterling Destructor booklet tell you how cheaply and efficiently they can be carried out.

THE C. O. BARTLETT & SNOW CO.
6209 Harvard Avenue, Cleveland, Ohio

Bartlett - Snow

Refuse Disposal Plants

Items and Abstracts for CIVIC AND COMMERCIAL ORGANIZATIONS

A Call to Public Service

LET me emphasize the duty of all educated men to serve their country with devotion and sacrifice in peace as well as in war. Serve her by sacrifice in order to take public office—elective or appointive office; serve her by your personal exertion in the towns, in the cities, in the communities where you live. Look for the means, the chance, the opportunity to serve democratic government. It is in democracy that the hope of the world lies. Take every chance that comes to you and make chances, if they do not come, for serving the public welfare.

—CHARLES W. ELIOT.

Why Not "Civic Art Committee"?

THAT "City Beautiful" as a committee designation is lacking in the virility needed for the highest measure of success, is pointed out by the Civic Development Department of the Chamber of Commerce of the United States, which has constantly emphasized the belief that when the "city useful" has been fully achieved, we shall have realized the city beautiful.

One of the Chamber's member organizations having appealed for assistance in finding a suitable substitute name, the Civic Development Department (through the *Nation's Business* for December, 1927), invites suggestions.

According to the announcement: "Many chambers wish to improve the appearance of their towns without waiting for the slow development of civic beauty as a part of good architecture, proper street proportions, etc. They are interested in parks, trees, monuments, and other ornamental features. What title other than 'City Beautiful' can be given committees engaged in such work? . . . 'Beauty' has an effeminate sound; give us something virile that expresses a man's town that has regard for order, dignity, a good appearance."

Discrimination Urged in Attracting Industries

A WARNING to communities to exercise careful discrimination in seeking to attract new industries was sounded by E. W. McCullough, Manager of the Department of Manufacture of the Chamber of Commerce of the United States, in a recent address before the Chamber of Commerce of New Castle, Pa.

Mr. McCullough suggested that a community should make a thorough study of its resources and advantages before seeking to acquire new industries. A local industrial survey, he said, would prove helpful in enlightening a prospective manufacturer as to his chance for success.

"It is equally important," he continued, "that a community investigate prospects, especially as to their character, solvency and managerial ability, because the community will be called upon to extend them credit and other assistance. Their failure after locating in the community would undoubtedly prove a serious setback to all concerned. Also, a careful inquiry should be made into the marketability of what the prospect intends to produce. Is it a live or declining product, and what is its future? Still further, will the class of labor it requires advance or retard the progress of the community? These and many more points are worthy of consideration.

"At the present time," he said, "there is no great exodus of industry going on from one section of the country to the other. Nor are prosperous plants in any line wildly seeking new locations. There has never been a time when industry should consider changing locations more carefully, nor when chambers of commerce should investigate more thoroughly the status of factories offered them, particularly with a view to determining whether the proposed industry is advancing or receding in demand, or possibly becoming obsolete."

Mr. McCullough called attention to the fact that between five and ten million dollars are spent annually by cities in advertising campaigns to attract new industries, and much more for survey and other industrial expansion efforts. "Too often," he cautioned, "industries which should not move for sound economic reasons, are attracted by this kind of community promotion.

"This whole enterprise of advancing the industrial side of a community," he concluded, " is a worthy activity for a live chamber of commerce, but it should be dealt with in a calm, dispassionate way, eliminating everything of the jazz order, which too often surrounds it. One good plant is worth more than many prospects."

Disastrous Effects of Current Practice in Apartment-House Promotion

DURING 1926—and doubtless during 1927—the percentage of families provided for in new multi-family dwellings, in cities of over 25,000 population throughout the United States, was greater than the percentage provided for in single-family dwellings. This statement is based on statistics of building permits for 257 cities, compiled by the U. S. Department of Commerce, details of which were published in this magazine last June, page 837.

This proof that Americans are becoming increasingly a nation of "cliff-dwellers" gives special importance to the study of economics of housing development and land subdivision which John Taylor Boyd, Jr., has been making for THE AMERICAN CITY. In the present issue the third article of this series is published. Of outstanding significance is the table on page 108, which shows conclusively the serious mistake which municipalities are making in allowing the erection of apartment houses covering a needlessly large percentage of lot area.

An experiment now under way in Madison, N. J., a suburban community of some 6,000 population, 26 miles from New York, may offer a practical suggestion for other small cities and suburbs. Madison adopted, some months ago, an amendment to its building code, by the terms of which amendment the erection in any part of the community of buildings to house more than one family for each 2,500 square feet of lot area is prohibited. This is equivalent, of course, to a maximum density of 17 families to the acre. The provision has not yet been tested in the courts; but in the only apartment house application for which permit has been granted since the adoption of the amendment, it was the means of securing from the prospective builder revised plans for a structure, now nearing completion, which houses only 28 families on about 2 acres of land.

By building-code amendments of this kind, or by much more liberal provision than is ordinarily made in zoning ordinances for open space around multi-family buildings, it is believed that communities of less than metropolitan size can go far towards avoiding the serious evils of congestion on the land and in the streets which now menace the larger cities. The Madison limit of 17 families to the acre may be somewhat too drastic for the multi-family districts of most cities; but some reasonable restriction of the kind will tend to stabilize land values on a basis fair both to the community and the landowner, and discourage the gambling in real estate which is one of the most serious handicaps to rational civic progress.

Public Opinion and the City Manager Plan

IF the public opinion of a community will not support intelligent, competent government, no manager and no form of government will be able permanently to produce satisfactory results. But in the development of an intelligent public opinion determined to secure honest, competent municipal government, the city manager plan is playing a leading role. The friends of good government can only wish for its rapid extension throughout city and into county and state governments.

—LEONARD D. WHITE.

The Ideal Chamber of Commerce

AMONG the "Essentials for the Prosperous and Happy City" as suggested by Ralph Heilman, Dean of Northwestern University, is "A Chamber of Commerce which unites all the industrial, business, civic, and social interests of the community for the purpose of concerted action in supporting those activities which are broader than any single business or industry, but which promote the interest and welfare of the community as a whole."

Announcing

THE W&T DRY BATTERY FLASHER

SOMETHING NEW IN FLASHING SIGNALS

Operated from dry batteries with automatic lamp changer, insuring continuous operation. A compact, inexpensive, reliable flashing mechanism.

Backed by a countrywide organization of engineers with over 8,000 installations of equipment in North American municipalities.

Write for

TECHNICAL PUBLICATION No. 86

See our exhibit Road Show, Cleveland, January 9-13th, 1928.

Also see our advertisement page 10.

WALLACE & TIERNAN

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F 1

Items and Abstracts for DEPARTMENTS of PUBLIC SAFETY

Manifold Duties of the Modern Fire Chief

IN a rapidly changing world, it is natural that fire department practices have been constantly enlarged and improved. The efficient fire chief of today supervises many operations in addition to the very necessary function of fire extinguishment. Such matters as the physical training of the firemen, the study of the chemistry of fire and explosions, modern drill school evolutions, practical hydraulics, ventilation, building construction, first aid, salvage operations, the investigation and prosecution of incendiarism, and the valuable work of actually preventing the occurrence of fires through up-to-date conservation activities, dignify the fire force as a scientific and essential service to the community.

—From the Fire Prevention Bulletin of the Chamber of Commerce of the United States.

Department of Commerce Estimates 23,264 Deaths During 1926 from Accidents in Which Automobiles Were Involved

AN estimate of 23,264 as the total number of deaths in the United States during the year 1926, in which automobiles were involved, is made in a statement released by the Department of Commerce on December 14, 1927. It is as follows:

"The Department of Commerce announces that in the registration area in continental United States there were 18,871 accidental deaths in 1926 charged to automobiles and other motor vehicles (excluding motorcycles), and that the death-rate from this cause was 17.9 per 100,000 population, against 17 in 1925, 15.7 in 1924, 14.9 in 1923, and 12.5 in 1922.

"It should be noted, however, that the deaths assigned to automobile accidents do not include those due to collisions of automobiles with street cars and with railroad trains. Therefore, as in 1926 there were 464 deaths due to collisions of automobiles with street cars and 1,556 due to collisions with railroad trains, these deaths if added to the 18,871 assigned to automobile accidents would make for the registration area a grand total of 20,891 deaths due to accidents in which automobiles were involved and would raise the rate from 17.9 to 19.9 per 100,000.

"As in 1926 the registration area included only 89.8 per cent of the total population of the United States, by assuming that the number of deaths from automobile accidents reported in the registration area comprises 89.8 per cent of the number of deaths from automobile accidents in the entire United States, it may be estimated that the total number of deaths in that year due to accidents in which automobiles were involved was approximately 23,264.

"In the 36 states for which data are available for the five-year period 1922 to 1926, the number of deaths from accidents caused by automobiles, motor trucks and commercial motor vehicles increased from 11,187 in 1922 to 17,321 in 1926, and the corresponding rates were 12.3 and 18.2.

"In the 67 cities for which similar data are available, the number of deaths increased from 4,891 in 1923 to 6,689 in 1926, and the rate increased from 17.2 to 21.7."

Totals and the rate per 100,000 are given in a five-year comparison for each state in the registration area and for 67 leading cities. The latter will be published in the 1928 MUNICIPAL INDEX.

Salaries of Large City Police and Fire Departments

THE following tables show the 1927 police and fire salaries in ten American cities of over 400,000 population:

POLICE DEPARTMENT SALARIES

City	Chief	Capt.	Lieut.	Sgt.	Patrolmen 1st yr.	Patrolmen 3d yr.
Chicago	$10,000	4,000	3,200	2,900	2,140	2,500
Philadelphia	5,500	2,600	2,400	2,150	1,306	1,721
Detroit	7,500	3,480	2,960	2,710	2,100	2,500
Cleveland	5,600	3,081	2,388	2,272	1,800	2,104
St. Louis	6,450	3,420	3,000	2,595	1,860	2,160
Pittsburgh	5,000	2,700	2,460	2,160	1,860	2,040
Baltimore	4,000	2,600	2,236	1,898	1,430	1,690
Buffalo	5,500	2,430	1,950	1,950	1,350	1,650
Milwaukee	6,000	2,820	2,670	2,320	1,920	2,040
Kansas City	5,000	3,000	2,400	2,100	1,500	1,800
Average	6,055	3,013	2,566	2,305	1,726	2,029
Cleveland, 15% increase	6,440	3,543	2,746	2,613	2,070	2,419

FIRE DEPARTMENT SALARIES

City	Chief	Bt.Ch.	Capt.	Lieut.	Firemen 1st yr.	Firemen Max.
Chicago	$8,000	4,000	3,200	2,900	2,140	2,500
Philadelphia	5,500	2,650	2,250	2,150	1,642	2,007
Detroit	6,000	3,750	2,940	2,640	2,100	2,400
Cleveland	5,600	3,081	2,388	2,272	1,800	2,104
St. Louis	5,000	3,000	2,520	2,280	1,680	2,160
Pittsburgh	5,000	3,000	2,460	2,250	1,800	2,040
Baltimore	5,000	2,900	2,000	1,875	1,500	1,700
Buffalo	5,800	3,072	2,850	2,550	1,950	2,350
Milwaukee	6,000	3,120	2,420	2,280	1,920	2,040
Kansas City	4,700	2,610	1,895	1,752	1,560	1,620
Average	5,660	3,118	2,492	2,492	1,809	2,092

These tables are reprinted from *Greater Cleveland* for November 23, 1927. In this bulletin The Citizens League of Cleveland points out the fact that when the voters of Cleveland approved, at the November election, a .7 mill tax levy "for current expenses," they authorized the Council to spend $1,400,000 in equalizing, and in some cases increasing, the salaries of city employees, with special—but not exclusive—reference to the salaries of policemen and firemen. A 15 per cent increase above the present figures for Cleveland as given in the foregoing tables has been proposed, but The Citizens League urges that the only way in which the charter provisions can be observed, the intentions of the voters complied with, and the spirit of fair play enforced, is for the salary readjustment committee to give consideration to the needs of all departments and divisions, before any increases are adopted, and then distribute the proceeds of the levy according to the greatest and most equitable needs.

The council, however, over the League's protest and the demand of the Federation of Labor for a flat $400 increase, adopted the 15 per cent increase ordinance with slight amendments on December 12. It is probable that the validity of the ordinance will be tested in the courts because of alleged illegal provisions.

Progress in Drafting Uniform Municipal Traffic Ordinance

WITH an attendance of 56, the Committee on Municipal Traffic Ordinance and Regulations, appointed by Secretary of Commerce Herbert Hoover, held a two-day session in Washington, Dec. 8 and 9. A preliminary draft of a proposed Uniform Traffic Ordinance was studied with great care by six sub-committees, whose recommendations were in turn submitted to the committee as a whole. Tentative conclusions were reached on most of the controversial points, such as rights of way for motorists and pedestrians, methods of making turns, parking and stopping, overtaking street cars, colors of traffic signal lights, etc. At the conclusion of the second day a Drafting Committee of 21 was appointed, to put the ordinance and the supporting statements in form for final submission to the larger group. It is hoped that the revised document can be approved and made available for general distribution to municipalities at the next meeting of the Committee on Municipal Traffic Ordinance and Regulations, to be held in Washington early in 1928. C. W. Stark, Secretary of the Committee, may be addressed at the Department of Commerce.

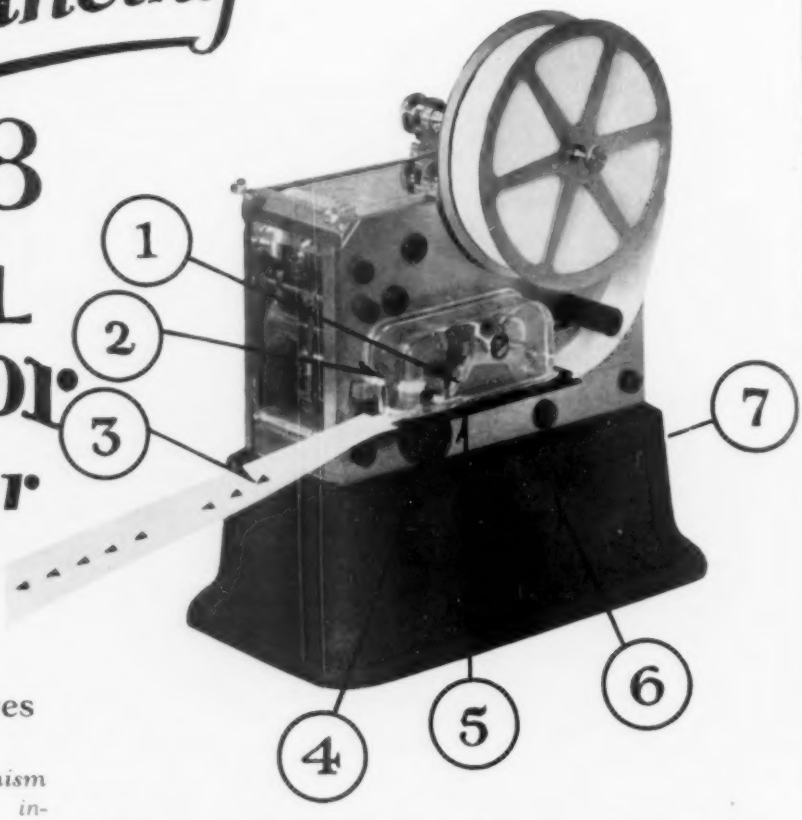
A Fire Department's Indispensables

ONE city's necessities are another city's unwarranted luxuries in fire-fighting apparatus. The fire chief may be certain of the legitimacy of his requisitions by careful study, not of the fire departments of neighboring cities but of the water-supply, the topography, conditions of streets, and the character of buildings and their occupancy in his own city. O. J. Swander, of the Kansas Inspection Bureau, makes this apparent, suggesting at the same time certain minimum requirements for fighting fire in various types of cities. His article begins on page 125.

Public Safety Administration

AN old weakness of public safety administration was that of multiple control. Many municipalities have now adopted a Department of Public Safety for the unified control of police, fire, health, and other agencies. But much of the problem now appears to center upon continuity of administrative control. Particularly in regard to the police is the intelligent, competent direction of personnel essential, along with sound organization. Bruce Smith deals with the status and opportunities of the police in "A Program for Combating Crime," page 100.

Announcing the 1928 MODEL Excelsior Register



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(A bulletin describing this Register more fully will be sent upon request)

The Gamewell Company

Newton Upper Falls, Mass.

"A Box A Block"

Vol. XXXVIII
No. 1

The American City

JANUARY
1928

443 Fourth Avenue
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Highways in the Making

A Resume of Progress in the Federal Highway Program—Facts on the Finances Required and the Utilization of Highway Transport

By THOMAS H. MacDONALD

Chief of the Bureau of Public Roads, U. S. Department of Agriculture

THERE are many public issues meriting attention and equitable adjustment. A number of these have the character of public works. On account of unprecedented floods, the devastation of both private and public property, and the desolation and loss of human life, flood control and rehabilitation in both the Mississippi Valley and the northeastern states, particularly the states of Vermont and New Hampshire, are problems of first importance. Waterway development seeks adequate attention. In the field of economic adjustment the problems of taxes and tax reduction, of income for public purposes, and of agricultural relief, all have a background of serious import to the welfare and prosperity of the country. Here are only a few of the major groups of problems with which the federal and state legislative bodies and the public executives must deal wisely.

THOMAS H. MacDONALD

For the past eight years highway building has been the greatest single public activity in the United States. The expenditure from local, state and federal funds has totaled annually about one billion dollars. This fact is generally understood, but many other facts having a very pertinent bearing upon the whole matter of the highway financial program are not so generally understood. Since provision has been made for the continuance of the Federal Aid program for the next fiscal year only, and the matter of the future of the Federal highway program comes again before the Congress this winter, it is timely to present a résumé of progress and some of the facts, both of the finances required and of the utilization of highway transport, which are determining factors in future policies.

Importance of Highway Improvement in Flood-devastated Areas

There is, at the outset, no conflict between the public problems here mentioned and a continuance of the general highway program. Rather, there is a close relationship between highway improvement and some of these important problems. In the flooded area of the Mississippi Valley and the New England States, the greatest public loss has been the damage to highways and bridges. Vermont is one of the smallest states. Its total area is 9,124 square miles. Only six states have smaller areas. Only four have smaller populations. Yet the preliminary estimate of the standard construction replacement costs of roads and bridges damaged and destroyed by the recent floods is about $7,500,000. In passing, it strengthens our confidence in the ability of modern highway construction to withstand these unprecedented flood conditions, to know how small has been the damage in these states. There are 218 miles of completed Federal Aid projects in Vermont, built at a cost of approximately $6,000,000. The contribution from Federal funds was about $2,900,000. The preliminary estimate of loss on these projects is five bridges, for which the total Federal Aid contribution was $85,000; and damage to roads of about $65,000 from Federal funds;—together, about $150,000 out of a total expenditure of $2,900,000, or a loss against Federal funds of approximately 5 per cent.

Roads and bridges built to state and federal standards in the Mississippi Valley withstood the continuous floods and flooding remarkably well. But these facts only accent the direct relationship between rehabilitation and the building to adequate standards of a sufficient mileage of highways to serve the area in those regions where flood control is essential. Highway improvement in the devastated areas is a major problem of rehabilitation.

Perhaps the outstanding reaction to be obtained from a review of the situation in these sorely afflicted portions of the country, or from a consideration

of any of these other national questions, is the inevitableness of the working of the principle of community interest. The more securely are the component parts of the nation knit together, the more acutely is the community of interests felt in its every part. It is because of the cumulative strength and continuing support of community effort that large undertakings are possible. The antithesis could be easily illustrated by known projects of large dimensions in other countries which were started in a big way but which have failed for want of national unity. There need be no fear of undertaking large enterprises as community enterprises, provided only they are carefully scheduled as to timeliness. This seems to be the important consideration, and when the answer is in the affirmative there need be no fear but that the national support will follow and the results will add so tremendously to the national wealth that the cost will be easily absorbed.

Swift Progress in Highway Building

The progress of this nation in building highways has had no parallel in all past history. But we have been engaged in a big way less than a decade. There are many today who were engaged in the highway field prior to the advent of the automobile. Twenty years ago improved rural highways seemed very important. The yearly progress toward better roads then seemed slow and inadequate. It is undoubtedly true that larger sums might well have been expended, and certainly, after the experience of two decades, it would be possible to utilize the funds to better advantage. But on the whole we were then building and making fair progress in improving only the types and mileages of roads that could be utilized. It was a favored argument for good roads that in earlier times other nations had built extensive systems of improved roads. Probably, more frequent reference has been made in highway literature to the early Roman roads than to any other single topic. As a matter of fact, the system of Roman roads had practically no bearing upon the situation here after the stagecoach disappeared. The Roman roads were built for serving the internal transportation needs of the Roman Empire and corresponded to our railroads; with the railroads, supplemented by the available waterways, there was no determining reason for the nation to throw its support behind the building of a great national system of highways. The building of highways as a great national problem was not yet timely.

Throughout history, highway transportation over any kind of roads was slow and inadequate, based on modern standards, because of its dependence upon muscular power. Our knowledge of history goes back perhaps 4,000 years B. C. There are evidences of centuries upon centuries before. Add to this 1927 years more, and our range of more or less certain knowledge covers 6,000 years. In all of this time, except for less than 20 years, the serviceability of highways was dependent upon muscular power and the daily range in mileage this kind of power gave the individual. The change has been too abrupt for us to comprehend fully the difference in the utilization of highways before the coming of the mechanical power, and after. The motor vehicle is now responsible for the value of highways to the nation because of their increased potential and actual utility, and the operation of the motor vehicle is dependent in turn upon improved highways. The cumulative loss to the nation now of inadequate highways is prohibitive. In the advance of civilization the building of improved highways as a national necessity has become timely.

The Great Utilization of Our Highways

In understanding lies community strength, so it is important that the people of the United States, and particularly those directly interested in the highway field, shall understand the actual and relative dimensions of the whole public highway undertaking. At the end of 1927 there were in service on the highways about 23,300,000 motor vehicles, an increase of about 6 per cent over 1926. There were consumed during the year, according to reliable estimates, 10,720,000,000 gallons of gasoline, an increase of 9 per cent over 1926. If there was an average operation of 12 miles per gallon, the combined rural highway and city street costs for the year were about one cent per vehicle-mile. At a retail price of twenty cents per gallon, the value of the fuel consumed is $2,144,000,000, which is more than one-third of the gross operating revenue, for the fiscal year ended last June, of all the first-class railroads of the United States, constituting 95 per cent of the total railroad mileage. Also, it is double the income for all rural highway purposes. The use of gasoline by the individual motor car is estimated now at 460 gallons for the year, an increase of 3.6 per cent over last year. It appears, therefore, that in addition to a 6 per cent increase in the number of vehicles in use, the use of the vehicles themselves is increasing.

The indicated total utilization of our rural highways and our city streets approximated for 1927 a total of 128 billion vehicle miles, a total so far beyond our comprehension that it fails to assist us greatly in visualizing the physical dimensions of the highway construction and maintenance necessities. But it is desirable to direct our thinking along definite lines so that our efforts may be

MILEAGE OF STATE HIGHWAYS, BY TYPES

Type	Mileage		Per Cent	
Transitory				
Unimproved	103,271		37.5	
Graded and drained	26,786		9.7	
Sand-clay and topsoil	11,026		4.0	
Gravel	68,771		25.0	
Waterbound macadam (treated and untreated)	16,709	226,563	6.1	82.3
Total transitory	226,563			
Durable				
Bituminous macadam	12,105		4.4	
Sheet asphalt	853		0.3	
Bituminous concrete	4,560		1.7	
Portland cement concrete	27,644		10.1	
Brick and other block pavements	3,185	48,347	1.2	17.7
Total durable	48,347			
Grand total		274,910		100.0

MILEAGE OF LOCAL ROADS, BY TYPES

Type	Mileage		Per Cent	
Transitory				
Unimproved	2,111,326		77.3	
Graded and drained	243,440		8.9	
Sand-clay and topsoil	58,210		2.1	
Gravel	222,512		8.1	
Waterbound macadam	51,448		1.9	
Gravel and waterbound macadam, treated	15,680	2,702,616	0.6	98.9
Total transitory	2,702,616			
Durable				
Bituminous macadam	10,490		0.4	
Sheet asphalt	1,921		0.1	
Bituminous concrete	3,420		0.1	
Portland cement concrete	10,106		0.4	
Brick and other block pavements	2,618	28,555	0.1	1.1
Total durable	28,555			
Grand total		2,731,171		100.0

exerted upon common objectives.

The Dimensions and Organization of the Nation's Highways

At the risk of being elementary, the physical highway problem is here stated. It should be noted that the statistics used have been gathered with painstaking care over many years by the Bureau of Public Roads, and the attention given to their collection and consolidation has been constantly increased. Original sources are used so far as possible and, in general, the statistics for the state activities are sufficiently accurate and are supported by state records. The statistics for the local activities are less accurate and much less fully supported by records of an adequate character. On the whole, however, we may obtain a sufficiently accurate national highway picture.

There are in the United States 3,006,081* miles of public highways. These are divided into two general classes: (a) those under the jurisdiction of the state highway departments, or state highways; and (b) local highways under the jurisdiction of county or township authorities. In some cases this class is divided into county and township roads. In the New England States it is composed of town roads.

In a few states there is some general supervision extended by the state highway departments over local roads and, in a few, state financial aid is extended to local roads in a limited way. In some states the local organizations have primary jurisdiction over the so-called state roads under the supervision of the state highway departments. With these general qualifications the present statistical data are as follows:

Total mileage of public roads in U. S.	3,006,081
Per cent of total mileage surfaced	17.4 per cent
Mileage of state highways	274,910
Mileage of state highways surfaced	144,854
Per cent of state highways surfaced	52.5 per cent
Mileage of local roads	2,731,171
Mileage of local roads surfaced	376,405
Per cent of local roads surfaced	13.8 per cent

The Federal highway system consists of 185,772 miles running coincidently with the state highway system, and since the state highways constitute the largest system, for the purpose of this discussion the two are not separated. Highways, to be suitable for continuous use of motor vehicles, must be surfaced. It will be noted that 47.2 per cent of the state highways have yet to receive initial surfacing, and that with all the work that has been done, 82.3 per cent are still unsurfaced or surfaced with types that must be considered transitory or in the process of stage improvement. This indicates in a fairly adequate manner the dimensions of the job ahead in the improvement of the state highways, without considering the amount of widening and supplementary construction that will be necessary on not less than 50 per cent of the mileage of the more durable types.

* All figures quoted are as of January 1, 1926.

Road Mileage That Should Be Returned to Agriculture

In the local classification, attention is at once riveted upon the large figure of unimproved, or only partially improved earth roads. This tremendous mileage of two million miles is composed largely of roads found along the section lines principally in the agricultural states established by law when the land was originally divided into geometric parcels. There is no question now but that a very large part of this mileage could be turned back into farm lands, with corresponding public and private benefits. This is not rashly, or without due consideration, advocated. The exact figures cannot be given without more detailed studies of each situation, but as a general statement it may be said that all the land taxes and all the gas and motor vehicle taxes originating from the lands along the greater percentage of this class of road would not be sufficient to maintain them, to say nothing of building them to an adequate standard. Further, the traffic over the roads does not justify their existence as public highways, and there is that much loss of agricultural lands.

Surfacing has been applied to 376,405 miles. Of this, 92.3 per cent is of the lower types which may or may not for these roads be transitory. In this class lie many miles of roads within metropolitan districts which will have to be improved to a high type.

There can be no intelligent discussion of the ultimately necessary local mileage until there is excluded a very large mileage of legally designated public roads which are not actually needed as highways, and which cannot possibly be improved in any foreseen time with the funds now available. It must be evident from this discussion that two general policies are sorely needed in the management of local roads:

First, planning commissions for metropolitan areas to lay out a system of roads for the area as a whole, although there will be found in such areas an astonishing number of civil jurisdictions. The Cook County, Illinois, and Cuyahoga County, Ohio, transport surveys sustain this fact.

Second, rural planning commissions are needed to work in conjunction with the state highway departments in the planning of county and feeder roads for the purpose of planning a system of public highways that will reach and serve the agricultural population with a minimum possible mileage.

That the latter statement may be guarded against misunderstanding or misquotation, it is repeated. It is possible by proper planning of rural community and local highway systems to reduce materially the mileage and consequent acreage of land now dedicated to public highways and yet give more adequate service to the rural sections than is now enjoyed. But such a desirable condition cannot be established except by intelligent and painstaking planning.

The surfacing of the state system is proceeding at the rate of approximately 20,000 miles per annum, and the surfacing of the local roads is proceeding at the rate of about 25,000 miles per annum, but the percentages of the types are not changing materially.

The annual cost of the highway program for 1926, based on the 1926 returns from the state highway system and the 1925 returns from the local highway systems, was $1,261,558,816, divided as follows:

Expenditures for state highways	$621,744,210
Expenditures for local roads	639,814,606

For purposes of this discussion, however, it is not desirable to go into details of financing, since, if an orderly plan is adopted, the indicated financial program will be the right one.

The following is quoted from an earlier article upon the general plan of a budget:

> "It has become more and more apparent, particularly as the discussion of annual budgets has become common, there are two kinds of budgeting: the budget that is prepared with reference to the expected income; and the budget that is prepared with reference to the physical condition and necessities of the highways. They might be termed the fiscal budget and the physical budget. The first type of budget is open to a great deal of mismanagement no matter how correct the fiscal information. The second type of budget is the only plan that eventually will work for economy."

Applying this system of budgeting the physical needs of the highways, in view of the physical condition set forth above, there are certain logical conclusions which may be summarized as follows:

(1) Based on an annual utilization of the highways of 128 billion vehicle-miles, the annual passenger mileage is approximately 2,880,000,000 miles. This is not less than eight times the passenger mileage of the steam railroads in 1925 and is indicative of the predominant use of the highways by people. The annual loss of surfacing from the low-type roads, plus the dust nuisance, means that more effective methods must be found and more largely utilized, both for holding these surfaces and for dust suppression. This is a field for bituminous construction.

(2) There is such tremendous mileage of roads, initially improved, on which the surface is not now adequate, that a low type of supplemental construction must be developed which can be adequately maintained. As indicative of the possibilities in this field, we have a demonstration of the fine crushed rock surfaces in the West. The processing with bituminous treatments gives promise of high-class service under moderate traffic at a reasonable annual maintenance cost. Furthermore, a type of maintenance is possible that renews the original smooth-riding qualities of the road. It has already been demonstrated that these surfaces can be scarified and a small amount of additional material added, that the work can be done on a quantity basis, and, which is all-important, at a low cost. There may be difficulties with this type of construction, but it gives such promise that both engineers and contractors can well afford to devote thought and effort to its perfection.

(3) There are long mileages of roads on both the state highway and the local highway systems, particularly in the regions west of the Mississippi River, on which the only hope now apparent of first-class highway service lies in the development of bituminous construction. Without criticizing the efforts that are being made toward the perfection in detail of the standard asphaltic mixtures for pavement construction, attention is directed toward the desirability and necessity of developing types of construction that can be laid more cheaply than the standard types and that will prove adequate. This may very well mean making a larger percentage of bituminous materials available for use in the lower types of construction, and to do this not only the processes but the equipment, and even the material itself, must be adapted to this purpose.

(4) Again, without thought of overlooking the desirability of the more durable types of construction which have long been established as standard, attention is directed toward the overwhelming physical problem confronting the country, which cannot be met quickly by the relatively small mileages of the high-cost construction that may be built with the present income from year to year. It does not appear impossible to develop processes, and the bituminous processes seem most adaptable for the purpose, that lend themselves to a complete overhauling at intervals, and through such overhauling largely restore the road to its original condition without impossible expense. Students of highway finance must be impressed with the fact that it is the annual cost of providing adequate highway service that is the important item, and the field of possibilities in bituminous construction has been only partially developed.

(5) Finally, the performance of many of the older bituminous macadam roads, particularly in the northeastern states, and abroad, provides confidence that this type of construction can be used under heavy traffic, provided the design and maintenance are adequate. In this field there seems to lie the possibility of more closely controlled manufacturing processes, coupled with changes in design, that would insure more uniform and more satisfactory results.

A Glance into the Future

In closing, this article has been prepared upon the general premise that the physical dimensions of the highway problem in this country are so enormous that we must, through the development of new processes and new methods, give adequate service over greater mileages than we are doing now. Since such a large percentage of the necessary expenditures are derived from the motor vehicle itself, and since we have a constantly increasing use of the motor vehicle, it seems apparent that these costs have not yet become burdensome. This, of course, is qualified by the fact that the country has experienced an unprecedented period of prosperity, except in the agricultural districts, and here the motor vehicle has become essential to the business. That we are obtaining so much service from even poorly built roads which have been rehabilitated with bituminous treatments, and that progress has been made in the development of new bituminous types of great promise, are facts which indicate that in this field of bituminous construction lies the hope of large mileages of highways that may render satisfactory service within reasonable costs.

ACKNOWLEDGMENT.—From a paper presented before the Sixth Annual Asphalt Paving Conference, November 28-December 2, 1927.

Street Widenings an Important Factor in Business and Realty Development, But Afford Feeble Traffic Relief in Congested Areas

UNDER this heading a statement advocating certain street-widening projects in New York, but placing special stress on the need for broader and more fundamental city planning, was issued December 3, 1927, by Captain William J. Pedrick, Vice-President and General Manager of The Fifth Avenue Association.

"More than twenty major street and avenue widenings, touching nearly every part of the Fifth Avenue section, have played a considerable part in attaining for property owners the present high realty values of this district," said Mr. Pedrick.

"So important has become the widening of streets upon business and realty development, that many narrow, gloomy streets close to a business district have become, after widening, paving, and the removal of encroachments, streets of fine shops and stores, each one of them doing a thriving business. The old saying that, if you have something to sell, the world will wear a path to your door has a vastly different interpretation here in New York. If you have something to sell, you must have a path to your door, and it must be a good path. If it is, you may be sure it will be well worn. . . .

"But while widening operations have their good effects on business and real estate, the question that overshadows all of these clippings and trimmings of our city streets for the sake of traffic is '*What next, when this must stop?*' And of course it must stop soon! A widening has its immediate effect, but the plan, as a whole, is only a weak substitute for the improvements really necessary to relieve traffic conditions. Let us leave our principal streets alone now, and face the traffic problem squarely. We have been giving pills where an operation is necessary. We have reached a point now on Fifth and Madison Avenues where any further trimming of sidewalks is a sacrifice of business upon the altar of traffic, and when the widening of Park Avenue is completed that street will have reached a point where further widening will destroy its remaining beauty.

"Don't let us sacrifice everything from one building line to another for the relief of traffic. We give and give of street and sidewalk space to traffic in order to relieve traffic, but what really results is that this widening brings more business into a section. More business creates more traffic, and new traffic presents new demands on street space. And the plan goes on like this in a vicious circle making little provision for the future until after a time business and traffic must reach a breaking-point. Then we are going to face the possibility of a crumbling of the business section and a division of that business over a wide area at segregated points. . . .

"Only by definite and courageous improvements such as our Association has advocated for a long time can we cope with a traffic situation that threatens, someone has said, 'to reach a point where the cars in the streets will move slower and slower until finally they stop entirely, and stand there, abandoned by their drivers to fall into decay and rot where they stand.' This is a far-fetched figure, but, if you will take a map of Manhattan, observe the narrow stretch of that island, and realize how inadequate are the present facilities to handle 1,000,000 cars, no matter which way those cars are going, the analogy of the deserted squadron of motor cars begins to assume some probabilities."

Study of American and European Thoroughfares—I

By W. H. TIEDEMAN
ASSISTANT CITY ENGINEER, SEATTLE, WASH.

THE cities of the United States that have a population of three-quarters of a million or over were already large when the auto introduced its special traffic problem. Their thoroughfares, that were of sufficient width in the pre-auto days, no longer sufficed, and much street widening resulted where this was financially possible. That being the case, I believe that when other cities in our country grow to the three-quarter-million point, if not earlier, they too will find their thoroughfares inadequate.

It would seem prudent for growing cities to anticipate such future needs and to take steps to meet the problem which will repeat itself wherever the population reaches the critical point.

Having this in mind, the authorities of Seattle, one of America's rapidly growing cities, decided that it was time and would be worth while to ascertain just what the original thoroughfare widths had been in those eastern cities where so much capital has been expended for street widening in recent years and compare them with our own. Much has been said in praise of the boulevards of European capitals, so it was decided that the entire subject should be exhausted while we were about it. As a result, a good portion of Europe was added to the itinerary.

It was my good fortune to be selected to collect the desired data, and I fully believe Seattle will profit immensely by this modest expenditure. In order that the information may be of general benefit, this article is written to call to the attention of officials in other growing cities specific facts which should spur them to prepare the way for the fuller efficiency of their cities before it becomes prohibitively expensive to make ample provision for additional thoroughfare requirements.

NEUBAUGIRTEL, VIENNA—ONLY ONE-THIRD OF THE TOTAL STREET WIDTH IS NOW USED FOR ROADWAYS

Street Layouts in the Old World

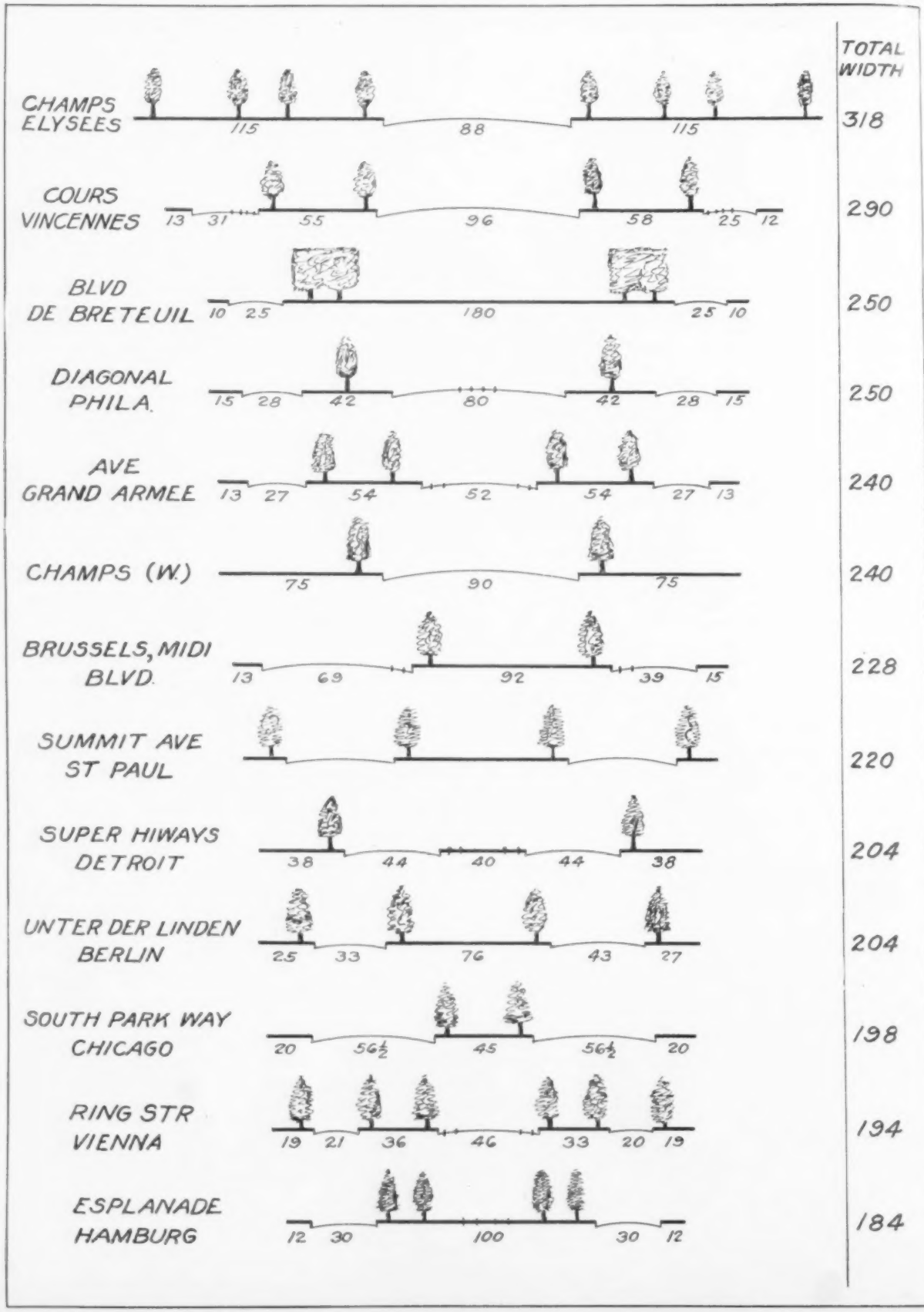
The largest cities in America and those of Europe may have nearly the same population, but beyond that fact there is no similarity. The Atlantic Ocean is responsible for the dissimilarity which strikes us so forcibly when we reach the other side. The capitals of Europe had a well-defined form before America was even discovered. If America had been attached to Europe, I am afraid our large cities would also show the same irregular street layouts. Portions of old Boston and New York even so resemble their European parents, and this may be true of some other New England cities which I could not visit. The capitals of Europe were laid out centuries ago and have retained their original form for the most part. There has been some local betterment here and there, and in London and Hamburg rather extensive replanning, following destructive fires, has taken place.

Even in ancient Rome, changes in street alignment and widths were made. The great fire, which we have been told was started at Nero's command and during which he fiddled, was probably attributed to him on circumstantial evidence. Historians have discovered that Nero was trying to buy certain property for a street betterment plan. The property-owners were not overawed, it seems, by an Emperor, and tried to hold him up—a very human inclination, we will all agree. Then, when a fire followed so closely upon Nero's futile efforts, and one which simplified his problems immensely, very naturally the story got out that incendiarism, provoked by disappointment, lay at the bottom of such propitious conflagration; quite a human conclusion and one which might again be reached even today. All of which shows that human nature is eternal and varies but little.

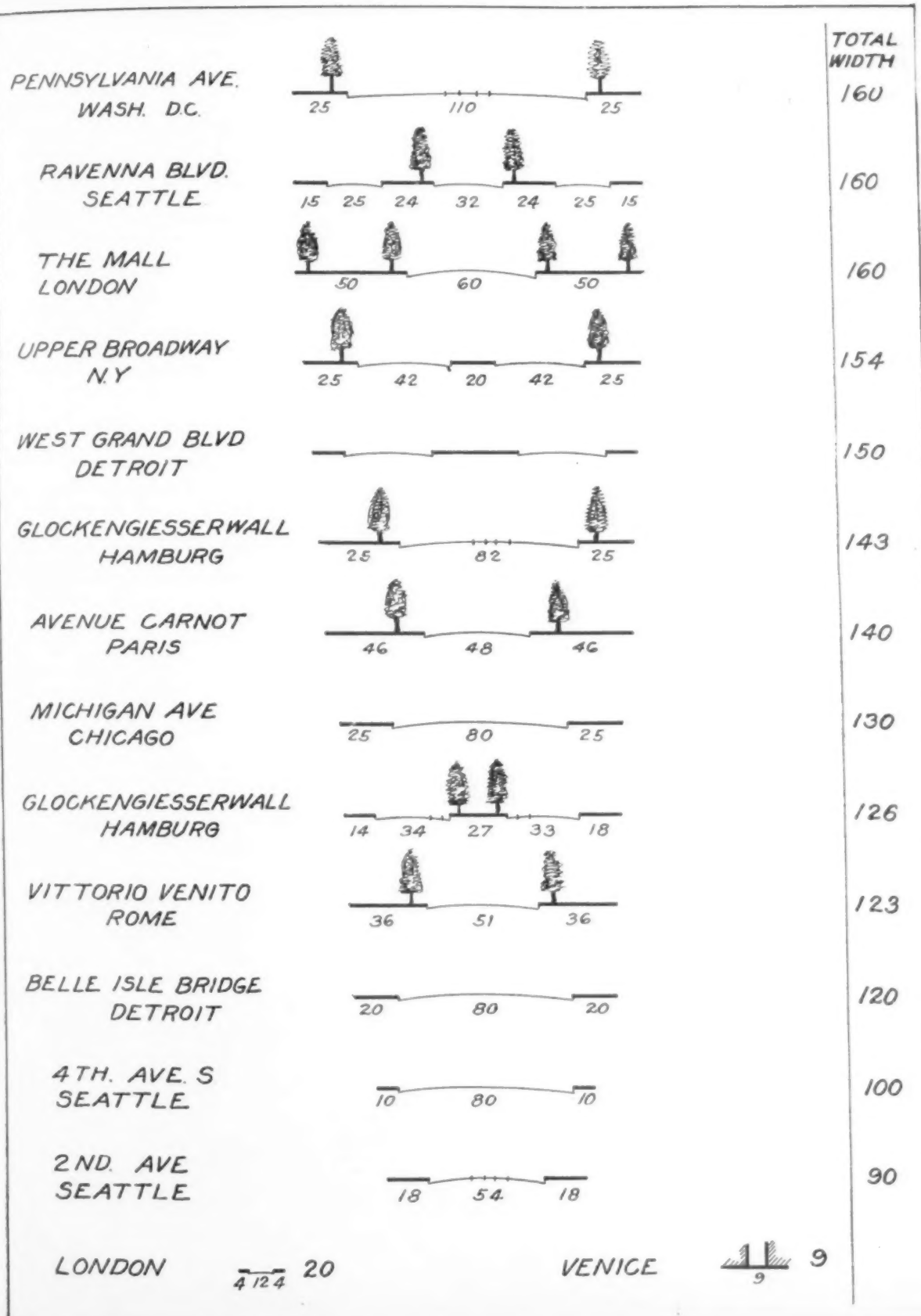
A number of influences no doub-

SCHOTTEURING STRASSE, VIENNA, A BUSINESS STREET THAT RESEMBLES A PARKWAY

Nearly all prominent wide streets in Europe are of this type



WIDTH AND SPACE DISTRIBUTION OF SOME FAMOUS AMERICAN AND EUROPEAN STREETS



WIDTH AND SPACE DISTRIBUTION OF SOME FAMOUS AMERICAN AND EUROPEAN STREETS

L'ARC DE TRIOMPHE, PARIS
Twelve avenues radiate from this as a center, ranging in width from 126 feet to 240 feet

caused American cities to assume a radically different form. Our earliest settlers were acquainted with the shortcomings of their parent cities and could be expected to make some improvements.

Then again, the rectangular scheme of land subdivision here would very easily result in a street plan along the cardinal directions of the compass. That fact is peculiarly true of American cities and distinguishes them from all the rest. When one wanders around London, for instance, it is difficult to analyze its complex form and reach a conclusion as to just what influences brought it about. Compact groups were necessary to secure the protection afforded by defensive walls, for the most part now obliterated. The Ring Streets of Brussels, Vienna and Paris were originally the sites of those walls. We have no counterpart for these Ring Streets in America, because none of them were ever so protected by fortifications which endured long enough to leave their imprint upon the city's plan. Paris must be considered separately. It enjoys a plan radically different from other European cities—and from any other part of the world, for that matter.

The famous boulevards of Europe are usually isolated streets magnified beyond the general prevailing widths, and are the result of a desire to give a proper setting to a palace or other exceptional building. The idea of providing liberal space for traffic, which is uppermost in every American municipal engineer's mind, was entirely absent; in fact, one is surprised to find how little of the street space is assigned to roadways. Trees still claim the greatest amount of space. I can see much reassignment of this space when the roadway needs increase, as they surely will when the auto reaches the European public more generally. The location of a city's future population cannot be predicted with any certainty during its infancy, but, by the time a population of, say, a half-million has been reached, a well-defined inclination has appeared. Often, topographical conditions will have an effect on this phase of city expansion. The well-defined arterial highways leading in important directions must be widened to provide for such future needs. The topography of Seattle, with its hills and valleys, frequently limits the number of such thoroughfares to one in a given direction. Wherever that is true and no relieving street can be developed, we really have to widen that one highway.

The Cause of Scattered Development

New cities such as ours did not grow compactly. Street-car transportation and low rates of fare brought large outlying attractive areas into competition. It is natural that people should select sightly districts between five and eight miles out, if the prices for the property suit their means better and transportation service is good. That happened in Seattle, and no doubt accounts for the scattered development so common in American cities.

This condition naturally develops thoroughfares of extreme importance and of considerable potential real estate value. For many years, however, the conversion of all the frontage on such streets to business use must be slow and even discouraging to the owners. As far

AVENUE DE LA GRANDE-ARMEE, PARIS, ON WHICH 108 FEET OUT OF A TOTAL OF 240 IS TODAY SET OUT FOR TREES, AN EASY SOURCE OF FUTURE ROADWAY SPACE

as such owners are concerned, the present street width is sufficient, and they would oppose any immediate expenditure for future needs. However, a review of the street-widening programs of American cities proves that 70- and 80-foot streets will not long suffice. The problem then becomes one of making some provision for the future without premature expenditure.

The Value of Setbacks

Our European parent cities long ago, and inadvertently, showed us a way. In common with the failings of other humans, we youngsters did not believe in the good example, and ignored it. Setback requirements, enforced for many years in England and Germany, are our salvation today. When a street is already inadequate, immediate operation by way of eminent domain alone can give relief. Where the need is not immediate but will be acute in ten or fifteen years, a setback ordinance paves the way for such future widening without involving any expense at present, and that is the welcome fact along sparsely developed and already over-assessed thoroughfares. Such ordinances are operating already in Cleveland and Los Angeles and permit only the erection of the first story of a building out to the present street margin. The upper floors must be kept back to the newly established width.

At first glance such requirements may seem to be an invasion of individual property rights. On careful analysis, however, it can easily be proved that a building owner will be financially wise to comply. If the building were built out, the owner would be paid for the land taken, which is the same in either case. He would also be paid to cut off the projecting portion and rebuild his front. The loss of tenants during such reconstruction is quite an item, to say nothing of the disturbed arrangement of suites. The owner would receive the bare cost of such remodeling, so why invite all the nuisance and possible financial loss by non-compliance with the setback scheme? The opposition to such ordinances is very infrequent, I am told.

Super-Highways

When planning for the future, decisions must be made upon the widths required. This is by no means well established in our progressive cities, because of local conditions limiting the feasibility of extreme or, rather, full, adequate width. In this respect Detroit reveals the most courage—or the most opportunity. The super-highway gridiron there and in its environs exceeds anything being attempted elsewhere. These super-highways are 204 feet wide overall, and one of them, Wider Woodward Avenue, is already improved for a length of about 15 miles with two roadways, each for travel in one direction and each 44 feet wide. Car lines occupy a central lane 40 feet wide, which leaves the pavement for purely vehicular use. The 38-foot marginal strips for sidewalks and trees may be invaded some day when more roadway space is required. I was told that the already tremendous volume of traffic on special days may compel such action much earlier than the builders anticipated. Detroit is truly "showing the world," but unfortunately we cannot all follow her wonderful example. Chicago also has displayed splendid courage in the widening of a street such as Western Avenue to 100 feet for a length of 23 miles. This width does not represent the ultimate desire of its engi-

RUE DE RIVOLI, PARIS
All the stores along the left side of this street have been arcaded to furnish sidewalks

neers but is as much as they could expect to realize under the well-developed conditions.

My recommendation to Seattle authorities after this tour of investigation was that all thoroughfares leading out into areas where our future population must live, should be widened from their existing widths, of 75 and 80 feet, to 108 feet; this future space to provide for a double-track street-car line on an 18-foot right-of-way in the center, with a 30-foot vehicle lane on each side. This leaves 15 feet for sidewalks. I predict that even such widths will compel a prohibition against standing automobiles during the morning and evening peak hours. Our department has already been ordered to prepare three setback ordinances, and I am confident that more will be forthcoming as we prove able to get them out. These decisions are the direct result of my report and I feel extremely gratified when I consider the enviable condition in which Seattle's thoroughfare system will be fifteen years from now. I do not, of course, expect all engineers to accept my 108-foot width, and realize that this is subject to some modification. In places of intense pedestrian activity my 15-foot allotment for walks should be further expanded; and where they are less, a reduction will be good design. I do feel confident, however, that in this automobile age, an efficient thoroughfare should have two lanes of travel in each direction open to automobiles at all times, with a possible three during rush hours.

As mentioned before, Washington, D. C., has an exceptional street system. Paris, however, leads them all with regard to width, number and direction. It seems quite extraordinary that just one people had such broad views. Nowhere else will one find a boulevard 318 feet in width or a condition such as the twelve avenues which radiate from the Arc de Triomphe. The widths of this remarkable group range from 126 feet to 240 feet.

CHAMPS-ELYSEES, PARIS
The roadway alone is 88 feet wide; the trees on each side occupy strips 115 feet wide

Where conditions, such as in suburban Detroit, will permit, I strongly advise the acquisition of space which may for many years be adorned by trees. When the trees must make way for additional roadway needs, it is probable that the acquisition of equivalent area by condemnation would be a very expensive matter.

Arcading

It frequently becomes necessary to widen a roadway where a widening of the entire street by condemnation would be a prohibitively expensive matter. The finest example of extensive arcading was observed along the Rue de Rivoli in Paris. The covered walks afford a protection from both sun and rain and are very popular promenades for window shoppers. This comfortable situation induces more people to stop to inspect window displays than in America. The cost must have been nominal indeed as compared with what an outright widening under such conditions of building development would have amounted to. In Hamburg also, one may observe numerous examples of permanent arcading. The buildings fronting on the railway station plaza in Rome present a concave face, all arcaded. The custom of sidewalk cafés here, however, leaves little space for the pedestrian, but the effect of the frontage is pleasing to the eye. It frequently happens that only a few large permanent buildings exist along a street when widening is proposed. In such cases it is usually possible to settle with the owners on a basis of leaving their buildings undisturbed for a period of fifteen years. In the meantime all new structures are erected to the new street line.

This has been done in Seattle to good advantage, and it is surprising how quickly such a period passes. One hotel, occupied by the Y. M. C. A., still projects, although the fifteen-year time originally agreed upon elapsed five years ago. In this case the City Council granted an extension of time. While this building is seven stories high and conspicuous on that account, it would indeed be interesting to know how few people have noticed and remembered this unusual projection. In other words, "temporary" arcading has not developed the complaints of offended esthetics which one would theorize as certain to result from such unusual procedure.

More About Setbacks

European cities, especially in England and Germany, have required for the past 75 years, in the interest of light, air and the public health, that tenements be set back about 20 or 25 feet from the property lines. On thoroughfares, this condition now will simplify condemnation and the authorities are preparing such widening plans to be launched as soon as financial conditions become more stable. It would have been fortunate for American cities if similar requirements had been imposed by them even fifty years ago. Few buildings survive the increasing demands for improvements for such a long period. If such legislation can be enacted in Europe, where the rights of property owners are guarded very jealously, it would seem relatively much easier to bring it about in America where the right of eminent domain is a well-established institution.

One plan employed in Ohio and in California is to fix by ordinance the future street line with intent to acquire by condemnation proceedings after a fixed period, usually fifteen years, the strip of private property. In the meantime, only the first story of a building may be constructed to the original street

OPERNRING, VIENNA, A BUSINESS STREET LIBERALLY PROVIDED WITH SHADY TREES

line, the upper floors being set back to the new line. While this may at first seem an invasion of private rights, it can readily be proved that it will be to an owner's financial advantage to comply.

Setback requirements are in force in modified form nearly everywhere. In New York City today the fronts of skyscrapers are set back above the fifteenth story. This will in time develop another pedestrian street at this level when all the buildings in a block have complied. One can see the forerunner of such a plan in Hamburg, where a walk has been provided completely surrounding the three upper floors of that city's largest office building. Employees may promenade during recess periods without mingling with the crowds on the street level.

European cities, on account of their extreme age, present one class of planning, while American cities belong to an entirely different group. One must remember that the necessity for very ample provision for moving vehicles was quite unknown even a century ago. As one recedes in point of time, the necessity diminishes still further. As a result, the general street system in European cities is irregular; and since the conditions which controlled are obliterated, one is at a loss to explain how the street layout could have become so complex.

The Ring Streets are of course found only in Europe, because, as previously stated, such boulevards were originally the location of the walls which surrounded a community for defensive purposes. With the development of artillery such walls became useless and were removed. The publicly owned space became a boulevard; in fact, the very name boulevard comes from bulwark—a protection.

One sees a fine example in Brussels. All that remains of the old wall is the old tower-gate Porte Namur, now a civic museum. This is a fine example of early massive masonry. The Ring Streets of Vienna had their origin in this same way. In Paris one sees three distinct rings, all the sites of former walls built to encompass the steadily growing city. A roughly circular formed street in a city plan permits one to by-pass the congested areas certain to exist in the downtown business district, which had its beginning near the center of the original circle and still persists there.

(To be continued in the February issue)

Excellent Results in Oiling Dirt Roads

ONE of the outstanding developments in California highway maintenance in the past year, according to *California Highways*, is the successful treatment of gravel- and rock-surfaced highways with oil, which will result in tremendous savings in maintenance, will solve the acute dust problem, conserve materials and provide a smooth, well-protected wearing surface free from corrugations.

California has a large mileage of secondary type roads improved during recent years. With the rapid increase in traffic, a real problem in maintenance and dust control on these roads has faced the state highway organization. In some instances the loss of material has been as high as an inch annually, representing a loss of $500 to $1,000 per mile. The dust problem has also become an acute one, having resulted in several instances in severe accidents because of the drivers' inability to see through the clouds of dust.

A number of experiments have been made to solve this dust problem and conserve the road material, but none has shown the promise of success of the present system of oiling. Between April 1 and July 1, 1927, 374 miles of highway were oiled at a cost of $510,000. On several sections extra amounts of road material were used, adding at least 2 inches to the surface of the road and providing a smooth surface that will last until funds for paving are available.

The comments concerning results obtained and the manner in which the traffic was handled over roads being oiled, reflected considerable credit upon the Department. Early in the spring, the Maintenance Department formulated a set of rules for its employees, as well as notices requesting the cooperation of the traveling public. All employees handling oiling jobs were impressed with the importance of reducing the inconveniences to autoists, and, judging from reports from various sources, success attended their efforts. Two automobile associations of the state have reported that they have received very few complaints and that the Department is to be congratulated upon working out a plan that has reduced motoring inconveniences such as detours and spattering to the minimum.

How the Smooth Finish Is Obtained

Getting the smooth finish on an oiled highway has become a real science on the part of California highway workers, and with the "mixing" methods it takes three days of constant working to secure the best results. Immediately after the mix has been laid down, a 7-foot grader, drawn by a small tractor, begins working the road behind the traffic for the purpose of keeping the surface smooth during compaction. When traffic first moves over the finished highway, a light car will sink into the surface as much as an inch. Within three hours the same car makes no impression, and in three days a 22,000-pound load will leave only faint marks, which are quickly ironed out by following traffic. The blade is kept steadily working until no further material can be moved, this stage usually being reached about the third day. For this work it is desirable that a rubber-tired tractor be used to avoid cutting up the surface. Vialog tests on an oiled highway in Division VIII demonstrated it to be smoother than any other type of road in the California highway system, which includes cement-concrete, asphaltic concrete, and bituminous macadam and after nine month no wear is apparent.

Costs Reduced

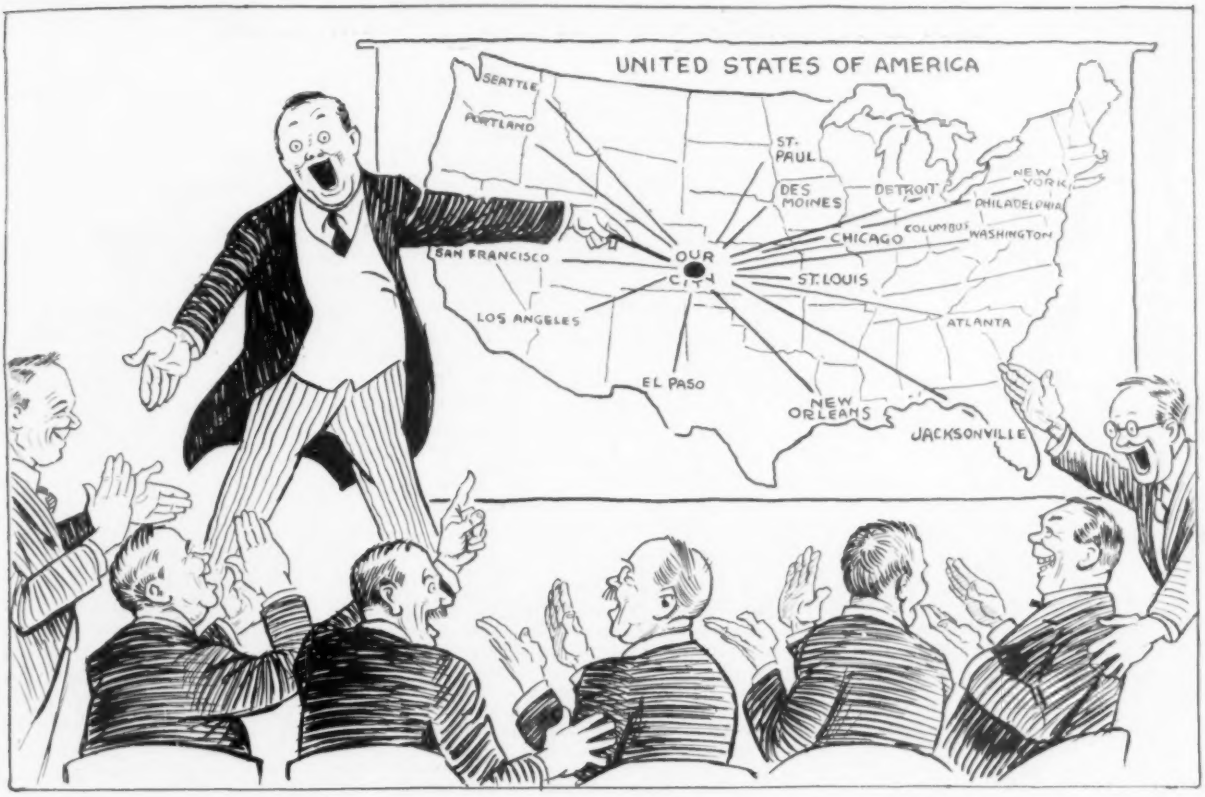
During 1927, using the same force of men at oiling who had learned the method in 1926, it was possible for a number of the State Highway Divisions not only to attain a more satisfactory finished dirt road surface, but to do the work at less cost. In Division VIII oiled highways cost $1,600 per mile in 1926, while in 1927 better results were obtained for $1,025.

Excessive Prices Paid by Corporations for Municipal Utility Properties

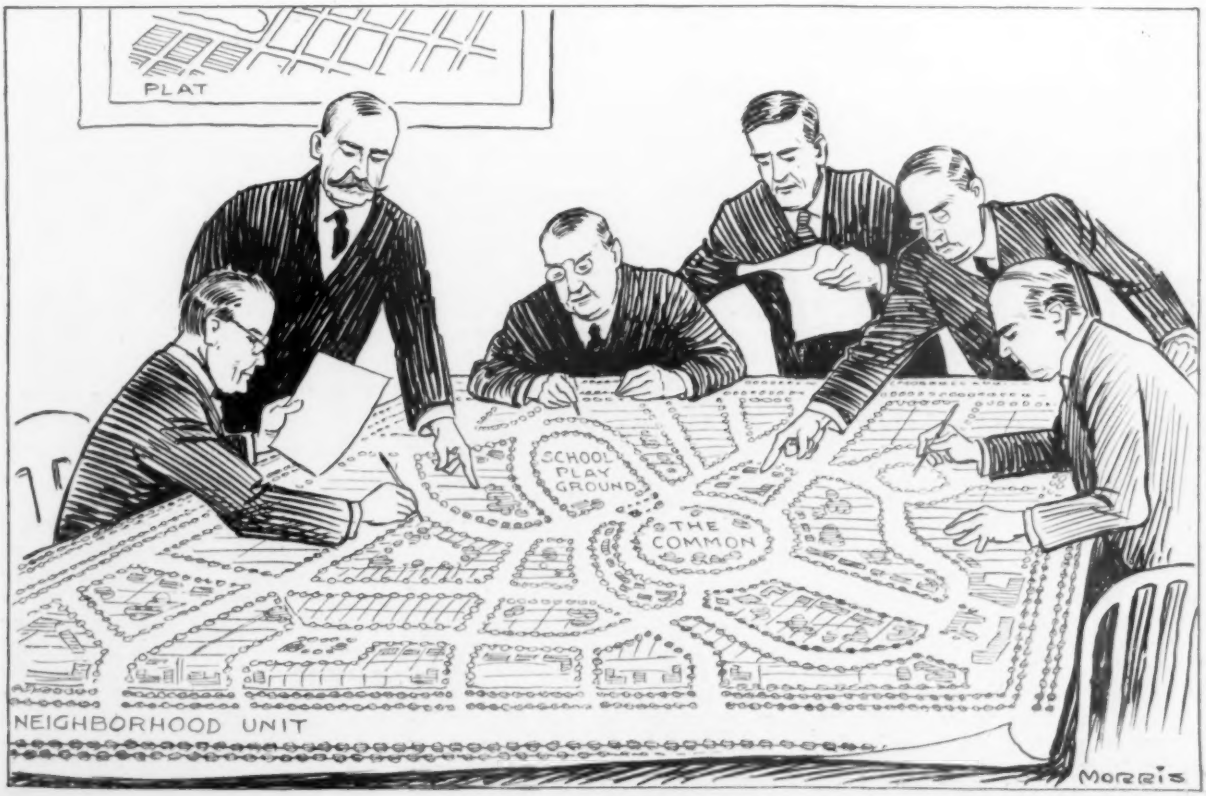
THE Public Service Commission of Maryland recently, in rendering an opinion on the application of a Maryland company for authority to purchase a municipal power-plant at Snow Hill is quoted in *Public Works* as follows:

"This Commission views with grave concern the scramble of holding companies for small, isolated and often entirely obsolete electric and other utility properties and their willingness to pay for such properties prices far beyond the cost of reproducing them. It is convinced that the prices paid in excess of the actual value of such properties comes in one form or another and in the long run out of the public's pocket. The money represented by these excessive prices is not a gift to the owners of these properties; it is paid only because the purchasers expect to make a profit out of it, either in the rates charged for service or in the sale of securities based on the stocks of the acquired properties. Such transactions do not appear to the commission to be in the public interest."

A purchase price of $31,000 for the Snow Hill plant was permitted by the Commission, the corporation being willing to write off $15,000 and capitalize only $16,000, which amount it had offered for the same property two years before. A competing company offered even more than the amount approved



The Boosters' Ideal—"Let's Put Our City on the Map"



The Planners' Ideal—"Let's Put the Map on Our City"

A Municipal Program for Combating Crime

By BRUCE SMITH

MANAGER, NATIONAL INSTITUTE OF PUBLIC ADMINISTRATION

AS BETWEEN the elimination of crime causes and improvement in police administration, it is probable that the latter offers the greater immediate opportunity in a municipal program for combating crime. The things which make for crime are deeply imbedded in what we loosely term "human nature," and run through the whole warp and woof of our social institutions. There is scarcely an unwholesome external influence which, at some time or other, has not been identified as a cause of criminality. While it is clearly the task of the municipality to attack these matters with vigor, it is just as clear that positive and substantial results can be secured only after years of unremitting effort.

It is otherwise with the police. They are more readily affected by administrative action; in fact, they are highly responsive to all of the many influences which are brought to bear upon them, both official and unofficial. If the unofficial influences have sometimes become so strong as virtually to control the functioning of the police force, the municipalities have themselves to blame. With a few partial exceptions, they have provided neither a sound organization nor a sound discipline.

It therefore would appear that the police provide the natural focus for municipal efforts directed at combating crime. What, then, is the present status of police administration in the cities of this country? What has been accomplished and what things have been left undone? One might well hesitate to commit oneself to generalizations in such a broad and varied field, but it is believed that the statements of fact which follow are at least substantially true.

Police Control by a Board or Single Responsible Administrator

We find that police boards as devices for multiple control are slowly but surely disappearing, particularly in the larger cities. In their stead, however, is a marked disposition to combine police, fire, health, weights and measures, and sometimes building-inspection service, under a single administrative agency, bearing the engaging title of Department of Public Safety. This, of course, is a necessary expedient under commission government charters, but it is also becoming fairly common under mayor and council charters, and occasionally under the commission-manager plan as well. As a result, the old problem of securing continuity of administrative control remains with us, as well as the question of how to distinguish between the proper fields of the civilian and technical heads of the force. Multiple police control has reappeared in a different guise.

It must be conceded that there is a certain theoretical justification for vesting control of the entire public safety function in a single commissioner. There is, without question, a certain degree of cooperation required between police and a fire department, or between police and a health department. But a scheme for cooperation which depends upon continuous amicable relations between independent authorities is clearly faulty. The consolidation of these various services under a single commissioner may be viewed as an attempt to meet the situation. Beyond this point, the disadvantages of this system heavily outweigh its single theoretical advantage. The difficulty involved in trying to differentiate between the proper fields of the public safety commissioner and the police chief is generally recognized. Another objection arises from the fact that the commissioner of public safety is usually an official bird of passage, while the police chief customarily enjoys a much more extended tenure of office. Changes of administration bring new commissioners into the picture, men who are unfamiliar with police administration, but who proceed to impose their views upon police headquarters. Under these circumstances, conflicts are natural and almost inevitable. They finally become the outstanding feature of police administration in the cities where this plan is followed.

Where the commission form of government has been adopted, it is difficult to see how anything can be done to cure this police problem without changing the entire scheme of government under which the city operates. Elsewhere, however, a vigorous and courageous handling of the matter will satisfy practical police needs without extensive charter revision. If the cities which have consolidated their public safety services, as well as those which have set up civilian and technical heads of their police departments, will meet the issue squarely and provide a single responsible administrator with complete powers and sufficient guarantees of official tenure to protect him against removal with each change of administration, a very substantial advance will have been made.

Qualifications Needed in a Police Executive

There is great concern in some quarters as to what official qualifications should be demanded of such a police executive. There are those who believe that he should be recruited directly from the police force. To these, it should be sufficient to answer that the job of the police administrator is after all rather remote from that of the professional policeman. Others maintain that the administrative head should be drawn from outside the force, from groups which are alien to the deadening effects of police routine. These seek their administrators among certain professional groups, such as the law and the military,

For Increased Efficiency in Local Police Administration

This paper deals briefly with the means which a municipality may employ to reduce the number of serious law infractions within its borders. It was read at the joint convention of the National Municipal League and Governmental Research Conference in New York City, November 11, 1927. At the very outset, the author pointed out that the objection might be raised that there is very little which the municipality, of its own motion, can do; that prosecutors, courts, sheriffs, coroners, and jailers are for the most part under state or county control; that the penal law and code of criminal procedure are statewide in their effect, and may be revised only through action by the state legislature. These things are true and, so far as is known, there is nowhere a serious intention to bring any of such matters within the exclusive sphere of municipal authorities.

There are two fields, however, in Mr. Smith's opinion, over which the municipal government may exercise a considerable influence. The causes which underlie the commission of criminal acts, if they once can be identified, may be profoundly influenced by city departments without too much dependence upon other administrative agencies; and the local police forces are now almost everywhere under direct municipal control. The paper, therefore, offers many practical suggestions for greater efficiency and success in local police administration.

without any great confidence that they are on the right track.

It is submitted that the key to the situation is to be found in establishing security of tenure for the administrative head. That obtained, the official himself may be recruited from a considerable number of callings. The essential things are that he shall be vigorous and resourceful in thought and action, of unblemished integrity, and possess marked capacity for handling men, because the essence of police administration consists in the intelligent direction of personnel. As time goes on, the administrator will acquire and develop a technique of police administration. When that time comes, the police department will be on a sound basis so far as overhead control is concerned, and a beginning will have been made towards a solution of the municipality's police problem.

The Question of Civil Service

It must be admitted that a complicating factor appears at this point. We have been contemplating a police system which commits itself to direct and single responsibility for police management. In the vast majority of those cities having civil service commissions, responsibility for the selection, promotion, and discipline of police personnel is divided between the police authorities on the one hand, and the civil service commission on the other. And in a practical sense, the civil service commission possesses the larger half. Here is a problem which must be faced squarely. It is submitted that if there is any solution short of complete exclusion of civil service control from police affairs, it will be found in confining the civil service commission to the duty of eliminating, by competitive examination, those police applicants who are palpably unfit. To concede to them the power virtually of selecting individual recruits or officers is to trim down the powers of the administrative head to a point where the office will no longer attract men of marked capacity. Thus the vicious circle is completed.

For many years we have been concerned with problems of civil service reform. The time seems to have come for a reform of civil service.

Crime Repression Through Continuous Patrols a Fundamental Need

Turning now to the major aspects of police service, we are confronted with the fact that continuous and systematic patrol threatens to become a vanishing institution. The addition of new and burdensome police activities, of which traffic control is a striking example, has withdrawn large numbers of men from patrol duty. Establishment of district stations without regard for modern facilities of transportation and communication has had the same effect. Every police station requires from 10 to 15 officers and men to operate it during a given 24-hour period. These are necessarily drawn from the patrol force. Special details, public office assignments, replacements for those on sick leave, rest days, and vacations are drawn from the same source. The patrol force has come to be viewed as a vast reservoir of man-power. Special and temporary duties almost necessarily take precedence over routine patrol.

Here is a serious condition. We are in danger of losing sight of the fact that crime repression, through continuous patrols, is fundamental to all police work. Yet there are now large cities in which less than half of the patrol posts are covered. In some cases, the men on station duty actually outnumber those who are patrolling beats. Foot-patrol beats embracing two square miles and twenty miles of streets are not uncommon. In short, the patrol force has been progressively diluted and dispersed until those who remain are unable either to familiarize themselves with their beats or to apply that continuous pressure which serves so effectively as a deterrent to certain types of criminal acts. It is suggested (though the fact clearly cannot be proved) that here may lie one of the causes of our so-called crime waves.

These facts and these conditions are not unrecognized. There has been insistent demand in police circles for material additions to the police quota. But if additional man-power was not forthcoming the matter usually has been allowed to rest there. It is a fact, however, that the effect of a substantial increase of patrol personnel may be secured by a vigorous pruning of special details, the consolidation of patrol districts, and a close adaptation of patrol methods to local requirements. Practical adaptation of fixed post duty and of circular and straightaway beats, the uses of foot and motor patrols, and of patrol booths, modern means of communicating with patrols, maintenance of reserves, redistribution of the patrol force throughout the 24 hours of the day, in accordance with proved need—all these may be studied and reviewed with profit. They constitute the very bone and sinew of the police organism.

Criminal Investigation

The detective bureau is coordinate with the patrol force only in an administrative sense; actually, it supplements the latter. With certain notable exceptions, the detective bureau does not function unless and until there has been a failure by the patrol force to repress crime. But because criminal investigation captivates the fancy and is relieved of the routine features of patrol work, the detective bureau is likely to be far more completely manned than is the patrol force. It is generally assumed that criminal investigation requires greater intelligence than patrol. This *may* be a debatable question. But it is certain that it requires a different *type* of individual. Here again, however, the cut-and-dried methods of civil service control have failed to operate with any selective effect. The nature of detective service demands certain qualities which, in the present state of our knowledge, can best be tested in the actual performance of detective duty. To select detective personnel by means of a set examination and then make it difficult or impossible for superior officers to return them to patrol, represents the last word in futility.

Record Forms and a Directing Intelligence

Some of the considerations entering into the distribution of uniformed patrols apply with almost equal force to criminal investigations. The hard-and-fast system of district detectives is seriously weakened when these are evenly distributed over the police districts of the city. Under this plan, certain district detectives may daily be assigned as many as ten or a dozen complaints for investigation. Successful investigations are clearly impossible. It may fairly be questioned, however, whether any serious attempt to this end is made in the majority of cities. The information available indicates that close supervision of detective work by qualified superiors is the exception rather than the rule. Assignment records are rarely maintained. Chiefs of detectives often are merely superior operatives who attach themselves to the investigation of especially important cases or to cases which bulk large in the public eye. Bureau clerks sometimes succeed in partially filling the gap. They assume the prerogative of assigning cases and keeping personal memoranda concerning them. By such expedients, many detective bureaus are saved from chaos.

It is clear that in the cities where these conditions prevail, an effort should be made to systematize detective operations from top to bottom. There will be nothing superhuman about the task. Probably no other sphere of police administration has received more intensive study. Record forms covering the assignment of cases, daily reports, and progress reports exist in wide variety and nearly all are adequate. Nothing is needed but a directing intelligence.

Crime Prevention by Removal of Causes

As already indicated, the matter of crime prevention merits the closest attention from municipal authorities, since it is one of a very few of the really constructive features of criminal justice administration. No program for combating crime which does not include it can be considered complete. Crime may be prevented, however, only to the extent

that the actual and underlying causes are removed. Some of these, such as the suppression of the liquor and narcotic traffic, are matters which primarily concern the police. There are other features, however, which appear clearly beyond the sphere of the police, but which are nevertheless well within the scope of municipal jurisdiction. The prompt and efficient relief of actual distress, the gradual elimination of degrading conditions of housing, provision of facilities for juvenile recreation by means of strategically located playgrounds — to these matters the municipalities may apply themselves in the confident belief that they will eventually be influential in reducing crime.

There is emphatic demand in some quarters that the whole concept of police service be revised so that the rank and file of the force may devote their efforts to prevention rather than to repression or apprehension. This view overlooks the fact that social welfare agencies exist in great number and variety. To project the police into their field would serve further to complicate a situation which is already complex. Furthermore, it might fairly be doubted whether a police force consisting largely of social workers armed with police powers would possess the stern qualities to deal effectively with certain types of offenses and offenders.

The Patrolman as the Eyes and Ears of the City Government

It therefore seems reasonable to conclude that the police may best serve the ends of crime prevention by familiarizing themselves with the type of work performed by all of the social welfare agencies of the community, both public and private. With this accomplished, the usefulness of the patrolman on his beat will be greatly increased. As the eyes and ears of the city government, he will serve as a highly useful reporting agency, and many conditions which now receive no attention will be brought to the notice of competent authority. But because social welfare agencies operate only during the hours of the business day, the police should also be prepared to relieve certain cases of acute distress, of their own motion and on their own responsibility. The police department, which operates at all hours, is in a position occasionally to render real constructive service in this manner.

The creation of women's bureaus in police departments in recent years has resulted in a few substantial contributions to police technique. That such bodies of women police officers do not constitute a complete solution of the crime-prevention problem is, however, abundantly clear. The extension of women's bureaus to all but the very smallest police departments should be actively encouraged. But the point cannot be stressed too strongly that from the necessities of the situation police forces must continue to be stern guardians of law and order, and recruited, organized, trained, and equipped accordingly.

Urgent Need for More and Better Police Schools

Finally, the attention of American cities might well be directed to the matter of police training. The rise and development of police schools probably constitute the greatest achievements of police administration in the past twenty years. A generation ago, it would have been necessary to argue the advisability of formal instruction for police recruits. It is not necessary to do so today. The early opposition of police administrators has almost disappeared. A number of admirable police training schools have been established, not only by some of the larger cities, but also by several of the states maintaining police forces. So far as is known, all of these are open to the members of other police departments. Moderate advantage has been taken of the opportunity thus offered. It still remains true, however, that the promising extension of police schools has been somewhat retarded in recent years. There appear to be two reasons for this condition. In the first place, the smaller police forces naturally find it difficult or impossible to organize, man, and operate their own training units. In other cities, where by reason of larger police quotas these considerations do not apply, the difficulty lies in the fact that police administrators are likely to be unfamiliar with pedagogical methods and procedure. One is likely to find the liveliest appreciation of the value of police training as an abstract proposition, but little or no grasp or comprehension of the actual course to be followed in order to secure it. There are instances of otherwise imposing police schools which employ the catechism method of instruction. There are other cases where the training period has been so frequently interrupted by demands upon the recruits' time that the schools themselves have virtually suspended operation. The widest variety of curricula still prevails. Time devoted to instruction ranges from one week to three months. The idea that a police training program consists largely of setting-up exercises, the simpler forms of military drill, and memorizing the location of police telegraph boxes, proves most persistent.

There are, then, two problems presented. The difficulty of establishing training units in the smaller police departments is clearly insuperable. If the members of these police forces are to receive systematic instruction in the policeman's art, it must be at other hands than those of their immediate administrative superiors. Cities which fall into this category can best meet the situation by requiring their police recruits to attend a police school operated by another municipality or by the state.

The problem of raising the standard and improving the curriculum of police schools operated by the larger cities is one requiring more extended consideration. It is submitted that the proposal made a few months ago by the New York State Crime Commission may offer a possible solution. The Commission recommended that the Board of Regents be given the power and the duty of licensing and supervising police training schools throughout the state; that the Board engage the services of an inspector who should give his assistance to any police department desiring to establish a police school or to improve one already in existence, and who should periodically inspect all police schools and certify those which maintain satisfactory standards. The commission further recommended that no member of a police force in the larger cities should be promoted to the rank of lieutenant, captain, inspector, or to equivalent grades, unless he should have completed a course of instruction in an approved school for police. . . .

It is not intended, of course, that such training should be required of a policeman prior to every promotion to which he might aspire, but merely to close the doors leading to the higher ranks and grades to those policemen who joined the force subsequent to the establishment of the plan and who had not at some time satisfactorily completed an approved course of police instruction. . . .

The First Line of Defense Against Crime

The foregoing matters represent a few of the salient features of police administration to which municipalities may apply themselves in their efforts to combat crime. They all have an important, and some have an intimate, bearing upon the question. It is probable that in many jurisdictions, state legislative action may be necessary in order to clear the decks for such a program. . . .

In the last analysis success in police administration depends upon sound organization and competent direction of personnel. For these there is no satisfactory substitute. The methods employed in the selection, training, advancement, and discipline of the rank and file actually condition the kind of police service that is rendered, day and night, year in and year out.

The police stand in the first line of defense against crime. If that line holds, some of the pressure upon all of the other agencies of criminal justice will be relaxed, and the way will be open for thoughtful and orderly improvement in the entire process, from apprehension to punishment.

Snow Removal in Philadelphia—I

By ARDIER M. SOBY, *Chief, and* JOHN H. NUTTALL, *Principal Assistant Engineer*
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SNOW upon the streets of a city is objectionable because it interferes with pedestrian and vehicular traffic, fire fighting and drainage; is prejudical to health; causes damages to buildings and pavements; and is unsightly when dirty. The principal reason for removing snow from the streets is to prevent the annoyance and injuries which unremoved snow causes, and the interference with pedestrian and vehicular traffic which is reflected in the decrease of business in a municipality.

Deep snow delays pedestrians, ice causes falls and injuries, and wet snow damages clothing and is likely to be the direct cause of colds and other ills. Interference with pedestrians is greatest where foot traffic is heaviest, as in the retail business and amusement sections. The greatest annoyance arises where deep snow is melted by a sudden thaw.

Snow interferes most seriously with vehicular traffic when deep or when hardened into ice. Deep snow delays traffic, causes structural strains, necessitates more cleaning and the consump-

GENERAL SNOW REMOVAL INSTRUCTIONS

OPERATION

1 START, AND WORK AS INSTRUCTED ON DISTRICT SHEETS
2 CLEAN ALL INTERSECTIONS BACK TO HOUSE LINES AND ALL LOADING POINTS FOR TROLLEYS FIRST
3 START ON YOUR SCHEDULE WITHIN BLOCKS AFTER INTERSECTIONS HAVE BEEN COMPLETED
4 OPERATE WITH TRAFFIC AND SO AS NOT TO INTERFERE WITH TRAFFIC
5 CLEAN ONLY ONE SIDE OF SINGLE TRACK STREET BLOCK BY BLOCK AT A TIME IN ORDER TO FACILITATE TRAFFIC IF POLICE ENFORCE PARKING REGULATION.
6 OPERATE SNOW LOADERS AGAINST TRAFFIC
7 CLEAN THOROUGHLY AND GO BACK OVER WORK TO REMOVE SIDEWALK MATERIAL THROWN IN STREET AFTER 1ST CLEANING.
8 TRUCKS MUST DUMP AT SPECIFIED DUMPS AND NO OTHERS, AND MUST PROCEED TO DUMPS BY SPECIFIED ROUTE
9 CONTRACTORS' FORCE MUST CONSIST OF 6 MEN FOR EACH TRUCK AND NO TRUCK IN EXCESS OF THIS RATE SHALL BE PERMITTED TO WORK
10 TRUCKS AWAITING MEN MUST PARK OUTSIDE OF TRAFFIC AT POINTS DESIGNATED

1

GENERAL SNOW REMOVAL INSTRUCTIONS

INSPECTION

1: IF SNOW IS EXPECTED LEAVE WORD AT ADDRESS GIVEN AS TO YOUR LOCATION IF NOT AT THAT ADDRESS
2: REPORT TO ROOM 336 AT TIME SPECIFIED WHEN YOU ARE NOTIFIED.
3: REPORT TO OFFICIAL IN CHARGE OF ACCOUNTS FOR ASSIGNMENT AND EQUIPMENT
4: EQUIPMENT CONSISTS OF:-
A: - CHECKS FOR LABORERS
B: - CARD FOR REPORTING LABOR CHECKS
C: - CARDS FOR TRUCKS
D: - INSPECTORS' SUMMARY
E: - PUNCH
F: - SNOW DIST. INSTRUCTION SHEET
G: - GENERAL INSTRUCTIONS - 3 SHEETS
5: REPORT TO ASSIGNMENT AND CONDUCT OPERATIONS AS INSTRUCTED ON OPERATION SHEET. PHONE OFFICE WHEN WORK STARTS AND WITHIN ONE HOUR IF CONTRACTOR DOES NOT REPORT
6: CHECK MEN AND TRUCKS CAREFULLY EACH HOUR
7: TELEPHONE OFFICE FOR INSTRUCTIONS WHEN ASSIGNED WORK IS WITHIN TWO HOURS OF COMPLETION. IF WORK WILL NOT BE COMPLETED CALL OFFICE BETWEEN 4 & 5 P. M. AND REPORT PROGRESS
8: RETURN IN PERSON ALL EQUIPMENT TO OFFICIAL IN CHARGE OF ACCOUNTS AT END OF YOUR SHIFT
9: REPORT AT BEGINNING OF YOUR NEXT SHIFT AND RECEIVE EQUIPMENT AND INSTRUCTION

2

GENERAL SNOW REMOVAL INSTRUCTIONS

INSPECTION (CONTINUED)

10 CONTRACTOR'S REPRESENTATIVE TO REPORT TO ROOM 336 FOR ASSIGNMENT IMMEDIATELY UPON NOTIFICATION AT 6 A. M. AND 6 P. M. EACH DAY THEREAFTER, WITH A STATEMENT OF TRUCKS AND MEN READY
11 CONTRACTORS FORCES TO REPORT TO DISTRICT ASSIGNED
12 CONTRACTOR TO SEND TRUCK TO ROOM 343 S. W. COR. CITY HALL FOR SHOVELS AND PICKS WHEN REQUESTED. CONTRACTOR WILL BE CHARGED FOR SHOVELS AND PICKS NOT RETURNED
13. CONTRACTORS FORCES TO WORK UNTIL NOTIFIED TO STOP

3

GENERAL SNOW REMOVAL INSTRUCTIONS

INSTRUCTIONS TO STREET CLEANING DISTRICTS

1 ALL STREET CLEANING MEN MUST BE READY TO REPORT AT ANY TIME DAY OR NIGHT DURING THE SNOW SEASON.
2. DISTRICT LISTS MUST BE COMPILED GIVING ADDRESSES OF ALL MEN SO GROUPED AS TO BE NOTIFIED BY FOREMEN ACCESSIBLE TO DISTRICT OFFICE
3. ALL BLOCKMEN TO REPORT TO GANGS AT STABLE ON SNOW CALL.
4. SNOW GANGS WORK IN SCHEDULED SECTION. CLEAN ALL SPECIAL LOCATIONS FIRST.
5. PLACE BLOCKMEN TO KEEP SPECIAL LOCATIONS CLEAN AFTER CROSSING WORK IS WELL UNDER WAY.
6. CROSSINGS TO BE CLEANED AT LEAST 6 FT. WIDE, & SNOW THROWN BACK OF BUILDING LINE, NOT PLACED IN CORNER PILES
7. TROLLEY LOADING POINTS TO BE CLEANED FULL LENGTH OF CAR IN USE
8. CLEAN FOR 5 FT. ON EACH SIDE OF FIRE PLUGS
9. CLEAN FOR 5 FT. ON EACH SIDE OF INLETS & GUTTERS 18" WIDE FOR TEN FEET ABOVE INLET
10. NO SIDEWALK OR PUBLIC PROPERTY, RELIGIOUS OR CHARITABLE INSTITUTION OR PRIVATE PROPERTY, TO BE CLEANED WITHOUT THE SPECIAL PERMISSION FROM THE CHIEF
11. CONTRACTORS' FORCES ASSIGNED TO YOU WILL BE USED AS FOLLOWS:-
A:- TO FINISH CROSSING SCHEDULE
B:- TO LIFT AND DISPOSE OF SNOW FROM INTERSECTIONS
C:-TO LIFT AND DISPOSE OF SNOW FROM STREETS
ALL WORK MUST PROCEED ACCORDING TO SCHEDULE.

4

GENERAL SNOW REMOVAL INSTRUCTIONS

INSTRUCTIONS TO STREET CLEANING DISTRICTS - (CONTINUED)

12 ACCOUNTING FOR CONTRACT FORCES AND METHOD OF OPERATION TO BE ACCORDING TO INSTRUCTION SHEETS FOR CENTRAL SNOW REMOVAL DISTRICTS
13. REPORT PROGRESS EACH MORNING BEFORE 10 A. M. TO MAIN OFFICE.
14. ASCERTAIN HOUR TO QUIT & INSTRUCTIONS FOR NEXT DAY FROM MAIN OFFICE EACH AFTERNOON BEFORE 5 P. M.
15 REPORT NECESSITY FOR PLOWS ON ANY STREET OTHER THAN THOSE ON HIGHWAY BUREAU SCHEDULE TO MAIN OFFICE.
16 ALL STREET CLEANING MEN SHALL REPORT AT DISTRICT STABLE AT 6 A. M. DURING OR FOLLOWING SNOW UNLESS NOTIFIED TO REPORT AT AN EARLIER HOUR

A. M. SOBY
CHIEF OF BUREAU.

5

GENERAL SNOW REMOVAL INSTRUCTIONS

ACCOUNTING PROCEDURE

LABOR CHECKS. CHECKS ARE IN SERIES OF DIFFERENT COLORS AND ONLY ONE COLOR WILL BE USED ON A SPECIFIC STORM. ONE CHECK SHALL BE ISSUED TO EACH LABORER EMPLOYED BY THE CONTRACTOR

LABOR CARDS. LABOR CARDS MUST BE FILLED IN WITH THE SERIAL NUMBER OF THE CHECK IN USE AND THE SEVERAL NUMBERS CHECKED OFF AS ISSUED. NUMBERS NOT ISSUED TO BE STRICKEN OFF OF CARDS. START AND FINISH OF WORKING TIME TO BE FILLED IN AND TOTALLED AT END OF DAY.
TIME STARTS FOR TRUCK WHEN SIX MEN ARE PRESENT FOR EACH TRUCK. (TIME FOR MEN STARTS WHEN THEY REPORT FOR WORK.) LUNCH TIME IS TO BE DEDUCTED IF MEN AND TRUCKS STOP WORK.

TRUCK CARDS. ALL BLANKS ON TRUCK CARDS MUST BE FILLED OUT IN FULL. TIME OF STARTING AND STOPPING WORK IS TO BE PUNCHED ACCURATELY. TIME TAKEN FOR LUNCH IS TO BE PUNCHED.

INSPECTOR'S SUMMARY. THIS SHEET SHALL BE MADE UP IN THE OFFICE FROM THE LABOR AND TRUCK CARDS AND WILL BE APPROVED BY THE INSPECTOR AND ACCEPTED BY THE CONTRACTOR WITHIN 48 HOURS AFTER THE FINISH OF DAY'S WORK.

6

SNOW-REMOVAL INSTRUCTIONS ISSUED IN PHILADELPHIA

Page 1 covers operations; pages 2 and 3, inspection; pages 4 and 5, instructions to regular municipal forces; and page 6 applies to accounting procedure. Pages 1, 2, 3, and 6 refer to the central area and the suburban contract area

SPECIFIC SNOW REMOVAL INSTRUCTIONS

SNOW DISTRICT #6

All Intersections First

Work Exactly as Instructed Below

(Start: Market St. at Broad
(Dump: Market St. Bridge (Schuylkill)

Market	N.&L.Broad	N.&L. 19th
16th	Market	N.&L. Chestnut
16th	"	" "
17th	"	" "
18th	"	" "
19th	"	" "

Contractor_____ Inspector_____

TYPE OF INSTRUCTIONS ISSUED TO SPECIFIC SNOW DISTRICTS

tion of more fuel, and interferes with parking. Ice is objectionable, because it is directly responsible for many collisions and other accidents. The movement of vehicles with passengers and goods is retarded by snow, and deep snow may cause serious consequences by delaying the visits of doctors, fire apparatus and ambulances and the delivery of food, fuel and milk.

All sections of a city suffer economic loss because of snow, but the direct loss of revenue to commercial enterprises is greatest in the retail and amusement centers. The interference with traffic is greatest where the traffic is densest, but character of street system, width of street, character of traffic, and character of paving are other factors. The interference caused by depth is not necessarily dependent upon the depth of snow on the level but may be greatest in a comparatively light snow where deep drifts are formed by strong winds, local topography and buildings.

The removal of snow is justified only where the cost of removal is less than the cost of annoyance and damage to health, life and property, but it is impossible to ascertain the loss in terms of money. It is possible to determine the loss sustained by business enterprises and amusements over a limited period within a narrow range by comparison with similar periods in the past.

Snow is usually objectionable in all parts of a large city, and its removal is desirable over the entire area, but particularly in the business section and from traffic streets. The actual area from which snow is removed in a municipality is usually determined by the municipal funds available for the work, the force available to clean a given area before the snow becomes too hard to remove economically, the time of year, and the climate.

The funds available for the snow-cleaning organization may be determined by both the ability of the city and the willingness of the citizens and legislative body to provide for this specific purpose.

The force available for snow removal varies greatly in different cities and is greatest in cities of cosmopolitan character with a large floating population. It is useless to endeavor to clean an area greater than can be cleaned with the forces available before the snow hardens to such an extent as to render picking necessary, as more obstruction to traffic is caused by attempts at snow removal at this stage than would be occasioned if the snow were permitted to remain as it fell.

The time of year influences the removal area, because it is desirable to clean a greater area at the beginning of winter when snow permitted to remain becomes incorporated with snow from later storms, than in the spring when snow removal may become a race between the removal force and the sun.

The climate is an important factor in the scope of snow removal, according to the length and severity of the cold season, the possibility of continuous cold or frequent fluctuations of temperature, and the character of snowstorms, such as heavy, light, wet, dry, or drifting.

The Problem in Philadelphia

The climate of Philadelphia varies from tropical to arctic. The highest temperature on record was 106 degrees F. in 1918, and the lowest was minus 6 degrees F. in 1899. The average daily temperature for the four months of December, January, February, and March is 35.2, from information gathered over a period of 100 years. The average annual snowfall during the past 40 years has been 24.3 inches, and the maximum annual snowfall was 44.6 inches in 1907. The longest period during the past hundred years that the ground has been covered with snow was 48 days. The winter temperature is not constant, and cold weather is frequently followed by thaws. Snow is frequently followed by rain, freezing and thawing, and snow is often accompanied by rain. In the middle of winter heavy snow is often removed entirely from the ground by warm weather within a few days after falling.

These climatic characteristics indicate that as large an area as possible should be cleaned of snow in the early winter to prevent an accumulation of snow upon the ground which will pack into ice under weather changes and traffic. The same characteristics indicate that it is useless to remove the snow from so large an area in the late winter, as the expense would be unjustified in removing material that would disappear through natural reasons within a short time.

The area to be cleaned is so large, the streets so narrow, and the force available so limited, that it is not practical to remove hardened snow unless it has become rutted and interferes seriously with traffic. The removal of snow from the business section is imperative under Philadelphia conditions, for a rapid thaw causes more annoyance and loss to retail business enterprises than slowly disappearing snow.

The central retail business, financial and amusement section of the city is concentrated in the old city of Philadelphia between South and Vine Streets and the Delaware and Schuylkill Rivers. This section is approximately 1 mile long and 2¼ miles wide. It contains 1,214,000 square yards of cartway and 807,000 square yards of footway paving from which the snow must be removed. An immense volume of traffic passes through this section, particularly through the central portion from Walnut to Arch Streets, inclusive. Few streets within this territory are of greater width than 50 feet, and many are narrower. Two wide streets—Market and Broad—intersect at practically the center of this territory, where the City Hall is located and around which traffic must pass.

Many prosperous suburban business sections exist. The formerly independent boroughs such as Frankford, Germantown and others, were incorporated with the city in 1853 but have retained their individual business life and local characteristics. The city has grown toward them and they toward each other, but undeveloped territories exist between them and the city and between each other. The main streets of these towns carry much traffic and are occupied by important business enterprises

BUREAU OF STREET CLEANING
SNOW REMOVAL FORCE ACCOUNT

DATE... .. ..192.... CONTRACTOR DISTRICT..... ...

No.	START	FINISH	HRS.	No.	START	FINISH	HRS.
1				26			
2				27			
3				28			
4				29			
5				30			
6				31			
7				32			
8				33			
9				34			
10							
11							
12							
13							
14							
15							
16							
17				42			
18				43			
19				44			
20				45			
21				46			
22				47			
23				48			
24				49			
25				50			
	TOTALS				TOTALS		

IF LUNCH HOUR IS TAKEN DEDUCT TIME

TOTAL CARRY FORWARD

INSPECTORS WILL CHECK EACH NUMBER AS CHECK IS ISSUED AND NOTE TIME OF START AND FINISH AND TIME OUT FOR LUNCH. WHERE CHECK IS MISSING DRAW LINE THROUGH NUMBER. TURN IN THIS CARD WITH TRUCK CARDS EACH DAY. (over)

D.P.W.
1926-SNOW-1927
2691
BU. STREET CLEANING

SNOW REMOVAL FORCE ACCOUNT CARD AND TYPE OF CHECK ISSUED TO TRUCKS

and amusements. The towns are connected with the city, and in some cases with each other, by main traffic thoroughfares, on many of which street-railway cars are operated. Other traffic routes exist without street-railway tracks, and these streets are used by busses and automobiles. Important junctions for the transfer of street-railway traffic exist at numerous points throughout the city.

The force available for removing snow in Philadelphia is not large, as the floating population of the city is relatively small. The snow-removal force is obtained partly from the force of contractors compelled to cease work because of the weather, but principally from the floating population. The city must compete for the floaters with the local street-railway companies and the railroads, and the city can rarely meet the transportation companies' bid for men when a deep-drifting snow occurs.

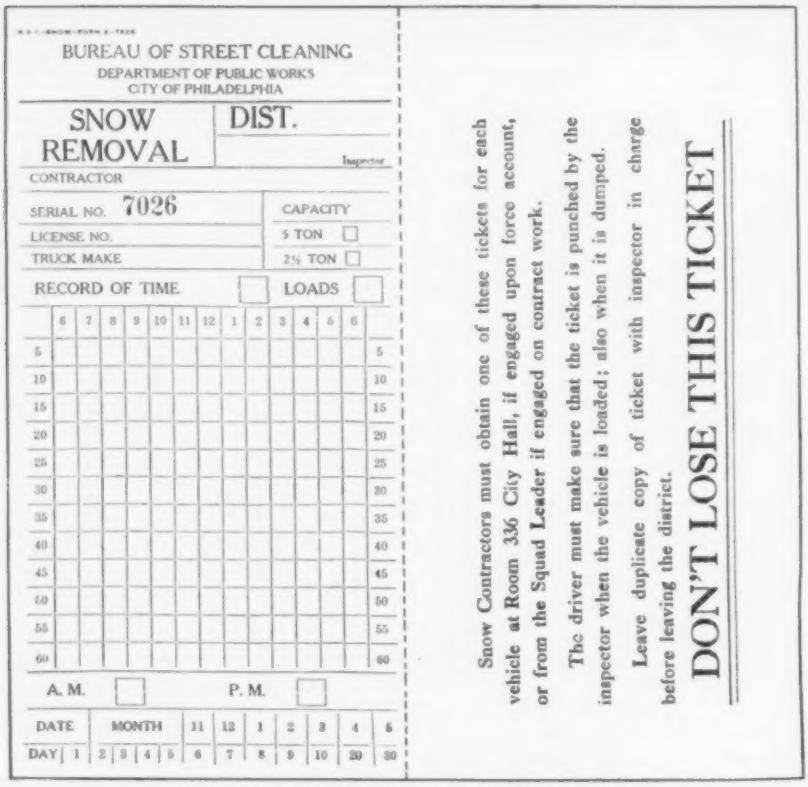
DISTRICT ..... DATE 192

PUNCH HERE

BUREAU OF STREET CLEANING, DR.

TO ..... CONTRACTOR FOR SNOW REMOVAL

TRUCK NO.	START	FINISH	LUNCH	HOURS WORKED



BUREAU OF STREET CLEANING
DEPARTMENT OF PUBLIC WORKS
CITY OF PHILADELPHIA

SNOW REMOVAL — DIST. — Inspector

CONTRACTOR

SERIAL NO. 7026 — CAPACITY

LICENSE NO. — 5 TON ☐

TRUCK MAKE — 2½ TON ☐

RECORD OF TIME ☐ LOADS ☐

	6	7	8	9	10	11	12	1	2	3	4	5	6	
5														5
10														10
15														15
20														20
25														25
30														30
35														35
40														40
45														45
50														50
55														55
60														60

A. M. ☐ P. M. ☐

DATE	MONTH	11	12	1	2	3	4	5
DAY	1 2 3 4 5 6 7 8 9 10	20	30					

Snow Contractors must obtain one of these tickets for each vehicle at Room 336 City Hall, if engaged upon force account, or from the Squad Leader if engaged on contract work.

The driver must make sure that the ticket is punched by the inspector when the vehicle is loaded; also when it is dumped.

Leave duplicate copy of ticket with inspector in charge before leaving the district.

DON'T LOSE THIS TICKET

FACE AND REVERSE OF VEHICLE REPORT CARD

Snow-Removal Organization

The conditions outlined render necessary the provision of an entirely separate force for snow removal with the exception of city-operated plows, snow loaders and inspectors in charge of the work. The entire force is obtained through contractors, each of whom is responsible for the provision of a given number of laborers and trucks. The central snow-removal district is divided into 38 primary sections, to each of which is assigned a contract organization. Suburban business streets and the traffic highways from which snow is removed are divided into 41 secondary sections, to which the forces of the contractors working in the central district are assigned after that district has been cleaned. Important intersections are also covered by contract forces released after the central section has been cleaned.

Snow sections are designed so that the most important traffic points and streets are cleaned first and so that minimum interference with traffic is caused. The sections are also devised so that operations may be conducted differently in case of heavy snow, light snow, heavy, and light traffic. The snow-removal work under this scheme is quite different on Sunday and at night from the work during the hours when traffic is heaviest.

Specific instructions are provided for the snow-removal work in each section, in addition to general instructions that apply to the work in general. The special instructions list the streets in the order in which they are to be cleaned and provide special requirements to obviate interference with traffic. The general instructions for the central area require the cleaning of all intersections first, the cleaning of streets in the order noted on the schedule, and other instructions.

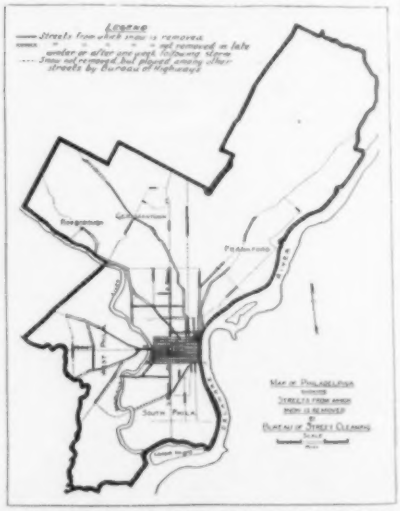
An inspector who is responsible for the prosecution of the work is in charge of each section. The central removal area is divided into four divisions, each in charge of a supervisor who reports directly to the central organization.

The plans for the work are prepared in the summer, and include plow schedules, section schedules, general instructions, special section instructions, and lists of inspectors and contractors with house and business telephone numbers and addresses. The plans for the work are discussed with the Bureau of Police in order to secure the cooperation of that Bureau in the work of removal. The program is also discussed with officials of the Philadelphia Rapid Transit Co., in order to coordinate the efforts of the two organizations.

The contractors are retained in the early fall after submitting evidence of the strength of their labor organization, their financial standing and the number of trucks they will be able to supply. The contractors obtain the labor from their own organization and from floaters picked up at various points throughout the city. The city supplies shovels to the contractors, who are charged a specified price for any shovels not returned to the district stock-room at the completion of the work.

All plowing incidental to snow-removal work is conducted directly by the Bureau of Street Cleaning with straight-blade diagonal plows mounted upon city flushers and operated by city drivers. The city also owns and operates six snow loaders in the most important removal sections.

(To be continued in the February issue)



MAP OF PHILADELPHIA, SHOWING STREETS FROM WHICH SNOW IS REMOVED BY THE BUREAU OF STREET CLEANING

Hooch, Hugging, Haste—and Other Traffic Warnings

THE State Highway Department of Ohio is using a number of safety-first slogans at safety exhibitions in an effort to reduce motor accidents. Several of these were originated by the Department and have found wide vogue Here are some of them as quoted in a recent issue of *Russell News:*

1. Don't try to scare locomotives with your horn.

2. A road hog roots up macadam with his nose.

3. Our roads are wide and smooth—don't burn them up.

4. Death is so permanent—take a minute or two at those dangerous railroad crossings.

5. Tragedy in seven words: Speed increases, breath ceases, rest in pieces.

6. Horse sense as well as horse power should enter into the operation of motor vehicles.

7. Live to ride another day by obeying signs—they mean what they say.

8. Keep your hands on the wheel—let your girl hug herself.

9 The three "H's"—Hooch—Hugging—Haste.

How Intensively Must We Use the Land?

A Study of the Economics of Housing Development and Land Subdivision—Part III

By JOHN TAYLOR BOYD, JR.*

THE apartment house comes last in our comparison of the three chief housing types. The first two types, namely, the single-family and the row-house types, were dealt with in the two previous articles.

The outstanding characteristic of the apartment house type is economical use of land. By superposing families in layers, the apartment house cuts the cost of land per family and per room almost to a nominal sum where land values are low. As was demonstrated in the previous articles, even where land values are "low," the cost of land per room and per family for the single-family and row types is so high that it frequently prohibits their use for the wage-earning groups who form the majority of the population.

To illustrate the difference more specifically: The price of $1 per square foot for land is very low in New York City even for a wage-earner's tenement location. The well-known "$9 a room a month" housing of the Metropolitan Life Insurance Company rests on land of about this value. The buildings are five stories high and cover 50¼ per cent of the site area. The $9 rental includes heat, hot water and dumbwaiter service, and it returns over 8 per cent net for interest and amortization on the total investment in which the insurance company has 100 per cent equity. This Metropolitan housing has additional economy due to the huge scale of the operation, without which the low rent would be impossible. For purposes of our comparison, it should be stated that the $9 rental would be at least $10.50 without the partial exemption from municipal taxes for a period of eight years with which the property is favored.

In this operation the cost of land at $1 per square foot figures at about $61 per room. Compared with the smaller house of the two individual house types and with the row house described last month, the result in land costs per room with land costing $1 per square foot would be as follows:

Type of House	Cost of Land
Metropolitan apartment	$61 per room
Row house	430 per room
Single-family house No. 2	750 per room

Now, when we realize that $1 per square foot is not high for an apartment house site in urban locations, and also that figures ranging from 25 cents to 50 cents are high for the individual and row types, we perceive why it is almost impossible to house the average American family in anything but apartment houses, *under present methods.* This simple comparison is another proof of the contention that the chief hope of a return to the single-family and row types for all but a small fraction of the population in large cities lies in a drastic improvement in our methods of land utilization. And along with improvement in land utilization must go great efficiency in housing production, particularly in design, in the use of large-scale methods and in the elimination of heavy charges for speculative finance.

The Folly of Anti-Social Apartment House Development

Most of the story of housing types in relation to land utilization is told in these few figures, but not all of it. The same figures tell conclusively of the gross ignorance, the inefficiency and the abuse that is characteristic of the contemporary building of most multi-family dwellings. The usual commercial practice deprives such buildings of sufficient land. The result is that the average apartment house lacks adequate "light and air," and becomes in other respects an emasculated type of building with certain strong anti-social characteristics, which could be eliminated completely if the apartment house was produced efficiently.

It is these abuses which have so irritated the public, and so roused the antagonism of city planners. The result is the many attempts, by zoning or otherwise, to legislate against the apartment house.

One can sympathize with this public resentment. The sight of a beautiful old residence street in a small town, lined with splendid trees and made charming with rows of attractive individual houses set well back from the sidewalk and surrounded with shrubbery and beautifully planted little lawns;—when this delightful scene, created at great expense of time and money, is blighted by an ugly apartment house of the intensive city type, having no more shape than a packing box, and crowded up solidly against the street and side property lines, thus stealing other people's light and air, blocking the vista along the street and ruining a lovely picture—what neighborhood would not object to this devastation? Even worse, people have put their life-savings in their own little homes and these are endangered. True, a rise in values may take place as the neighborhood changes from single-family houses to apartments, but the change may be slow, and rise in land price may not be great enough to offset the depreciation on the small houses, now rendered obsolescent. It is only in the larger fast-growing cities that the change to apartments is effected so rapidly that the possible increase in land value is not eaten up in carrying charges. Serious financial loss as well as social detriment are involved in the breaking-up of fine neighborhoods.

Of course, the remedy often employed for this evil in zoning ordinances is to exclude multi-family houses from most residence neighborhoods and to set apart districts for apartment houses. In these districts most ordinances permit apartments houses with but little restriction of control over coverage or planning. In this kind of zoning practice there appears the intention of abandoning the apartment house to its own worst effects in locations where it is assumed that its contaminating influence can do little harm.

But such zoning practice is unscientific in failing to control properly the design of multi-family houses. The point is that, whether one likes it or not, the apartment house type is becoming ever more popular. Its efficiency is lessening the demand for the other housing types, and the financial appeal of the apartment house to speculative builders is much enhanced by our uneconomic practices of land utilization. The aim of city planners should be, therefore, to adopt a progressive policy towards the apartment house, and, by correct zoning ordinances and building codes, to require intelligent planning of sites and buildings and so maintain living standards in the rapidly growing apartment house neighborhoods on as decent a plane as possible. Otherwise, our smaller towns and cities are in danger of deteriorating to the level of the Bronx, New York City, where are to be seen street after street of intensive solidly-walled five-and six-story "walk-

* The author of these articles is of the firm of Arthur C. Holden and Associates, Architects, who have acted as consulting architects to the New York State Board of Housing, and also to the New York Commission for the Revision of the Tenement House Law.

ups," of the middle class, without a glimpse of a bit of green, offering one of the dreariest prospects known to man. The sight is even worse than in the neighborhoods suffering from the mechanical repetition of the row house. This is the disaster which we must prevent.

Apartment Houses Should Have More Open Surroundings Than Are Required for Small Homes

It is easy to state the basic principle on which zoning of apartment houses on low-priced land should be founded. Equally important, it is easy to state the principle accurately in figures, establishing sound standards of site coverage. *The comparative figures of land costs per room and per family prove that the apartment house on low-value land is so economical of land that it can support, with but very slight extra financial charge as compared with the existing custom of high coverage, a larger proportion of unbuilt-on area of site than can either the single-family or the row house types.* In other words, the apartment house should have more land around it—devoted to garden and recreation space—than the single-family or row house, and any slight additional cost of so doing, as compared with existing method, will be more than offset by the increase in the rental value of the building. Commercial real estate practice, on the other hand, follows generally the directly opposite policy of providing much less for apartment houses than for single-family types. In view of the facts in the case, it is difficult to comprehend the stupidity of current practice of robbing the apartment house of its necessary land, since such stupidity endangers real estate profits, except in rapidly growing districts where profits can be taken by quick sale.

This basic principle appears clearly in the figures of comparative land costs per room. The land costs per room and per family for the Metropolitan housing in five-story buildings covering approximately 50 per cent of the site, are $61 and $257 respectively for land costs of $1 per square foot. Suppose the houses were only four stories high and covered only 30 per cent of the lot, which is the coverage of the row type selected for our comparison. The cost of land then increases to approximately $124 and $429, as compared with $430 and $2,580 for the row-house type. Taking the single-family house number 2,* the comparison is $750 and $4,500. But as was demonstrated, the assumed land value of $1 a square foot is prohibitive for the single-family and row types if low-cost housing is to be considered. Half a dollar a square foot is, as indicated by the figures in the previous article, almost a maximum for row-house costs, and a quarter of a dollar is a maximum for single-family house costs. But at these prices the land cost to the apartment house of a sound standard of coverage is almost negligible. The results of these comparisons are seen in the table below.

In this table certain qualifications should be noted. The figures for apartment coverage do not include garage, because experience seems to show that garages are too great a nuisance in apartment house groups of coverage as high as 30 per cent. They should be relegated to a separate site unless ample space is available, as the City Housing Corporation of New York has found desirable in the case of their row housing.

Costs per room vary, of course, as room sizes vary. The Metropolitan room sizes are minimum; but on very low land values, of a dollar or less, an increase of 20 per cent or 30 per cent in room sizes would not greatly alter the figures of land costs per room, as reflected in rentals.

What These Figures Demonstrate

Here are the facts in the case, in dollars and cents, as clear as crystal. Their bearing on apartment house architecture and on land utilization should be as clearly understood.

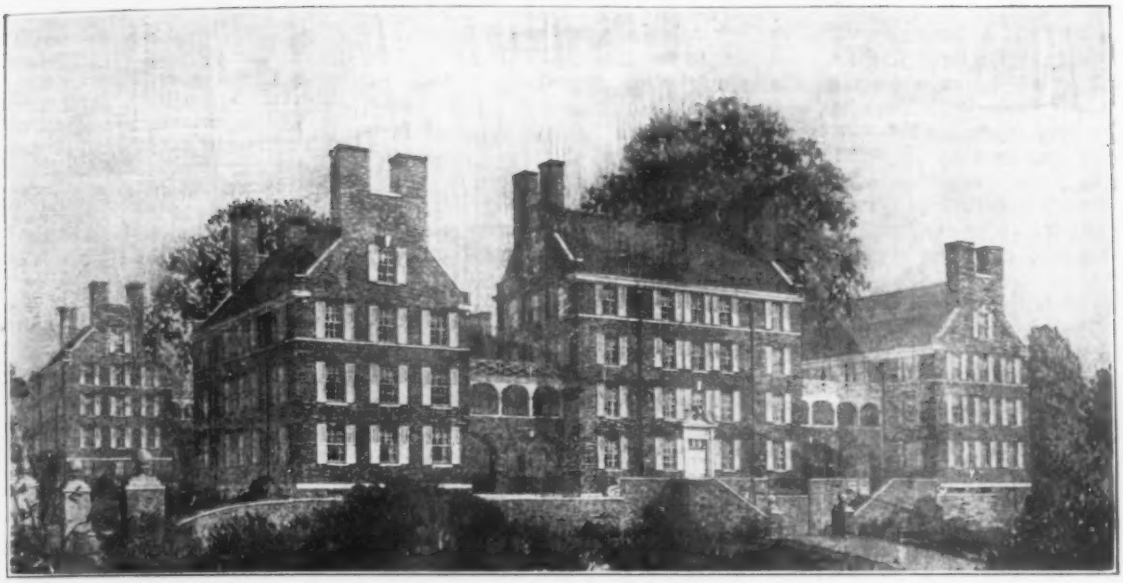
First, the financial and social folly of the average speculative builder, in robbing the apartment house of its rightful proportion of land, referred to above, is demonstrated. The whole point of the economics of apartment house design on low-priced land lies in the fact that the cost of land per family is negligible. It scarcely figures in the problem at all. But, in current practice—permitted also in most tenement house laws, building codes and zoning ordinances—coverages of apartment houses run up to 70 per cent in interior lots and to 90 per cent on corners. Rarely do they fall as low as 60 per cent or 65 per cent on interior lots and 75 per cent on corners. This practice prevails in spite of the example of a number of interesting commercial demonstrations, in many cases in and around New York City, of the financial gain to be made in considerably lower coverages on land of intermediate and very high values. The architectural press contains the literature of this phase, but here two examples will suffice. The Queensboro Corporation has developed a tract of land about half as large as Central Park, with housing, chiefly in apartments, renting from $25 per room per month up, or selling on the tenant-ownership plan on a similar basis. The company's land values are not published, but they may be figured to be at least $2 a square foot and higher. In a series of experiments in building large groups of apartments, the Queensboro Corporation has found it good business to reduce coverage from 44 to 36 per cent. Even where one of its large buildings has streets on three sides, the coverage rises hardly above 50 per cent. The second case is in Manhattan, where a syndicate has recently found profit in cooperative elevator ten- and sixteen-story apartments covering about 55 per cent on land valued at over $20 a square foot. But, despite such examples, the ignorance of current practice persists. Curiously enough, it is most notable among the real estate and building interests in suburbs, and in smaller towns and cities. There the building interests do not yet know of the invention of the garden apartment. They are like the Thibetan tribesman who drives his bullock team, unconscious of the existence of Mr. Ford.

Secondly, the emasculation of the apartment house occurs not only in depriving it of essential land, but also in seriously impairing good design in the apartment itself. Without going too far into architectural technique, it can be said that a cramped lot usually makes for a cramped building, in which the homes are not true homes, but unattractive, deficient in light and air, and burdened with an excessive proportion of non-rent-paying and wasted space. Naturally, the poor planning of the average apartment house has an unfavorable financial effect on its rental value. The fact is that, when properly planned, a single apartment house should be more

*Illustrated on page 739 of THE AMERICAN CITY for December, 1927.

Type of House	Coverage	Cost of Land per Room with Land Values of: $1 Sq. Ft. Per Room	50c Sq. Ft. Per Room	25c Sq. Ft. Per Room	10c Sq. Ft. Per Room
Apartment—5 stories	50%	$ 60.90	$ 30.45	$ 15.23	$ 6.09
Apartment—4 stories	30%	124.00	62.00	31.00	12.40
Apartment—4 stories	20%	187.50	93.75	46.88	18.75
Apartment—4 stories	10%	375.00	187.50	93.75	37.50
Apartment—3 stories	50%	101.94	50.97	25.48	10.19
Apartment—3 stories	30%	162.62	81.31	40.65	16.26
Apartment—3 stories	20%	243.93	121.96	60.98	24.39
Apartment—3 stories	10%	487.86	243.93	121.96	48.79
Individual House	18⅔% (with garage)	750.00	375.00	187.50	75.00
Row House	30.6% (with garage)	430.00	215.00	107.50	43.00

Note to the foregoing table:—The type of apartment house selected for comparison is the Metropolitan Life Insurance Company's model housing. The average building has fewer rooms on the ground floor than on the typical floor. Nevertheless, in calculating the number of rooms for a four-story and a three-story apartment, it has been assumed that the total number of rooms in each building were averaged between all floors, because the New York State Housing Board studies showed that stairs could be so located as to involve no loss of space on ground floor, unless a room were taken for an office, playroom, baby-carriage room etc.

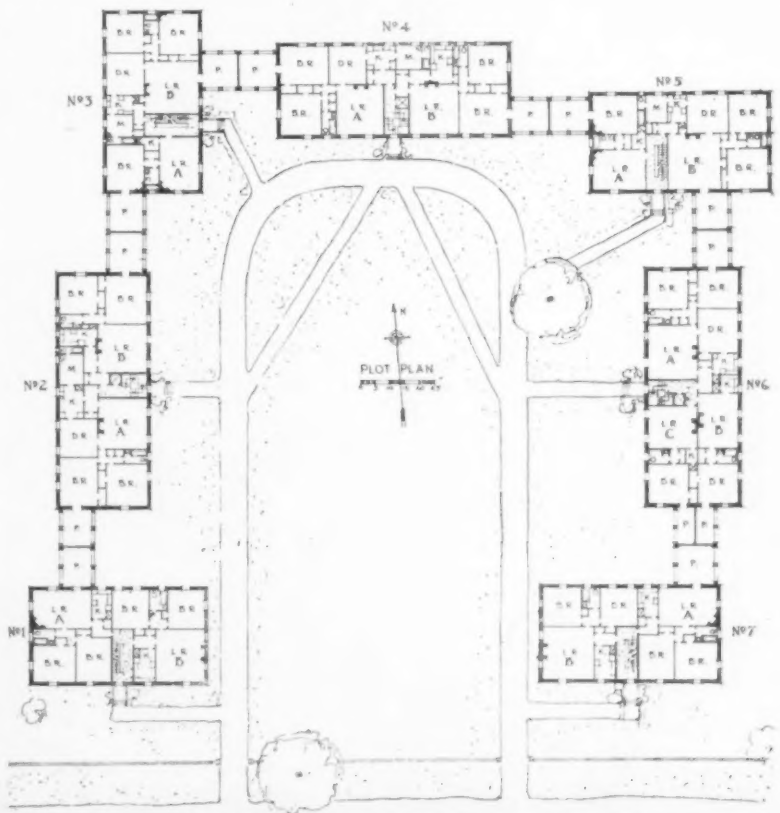


Arthur C. Holden and Associates, Architects

GARDEN APARTMENT GROUP FOR LOW-PRICED LAND

livable and more attractive than a row house which derives light from only front and rear. Great attractions may be had in "duplex" apartments. In short, the apartment house is a flexible type of structure, approaching the individual house in this respect.

Thirdly, the disastrous effect on the community of current practice in apartment house promotion is made evident. The figures in the table indicate the remedies for these evils. When enough land is given to the apartment to reduce the coverage to 30 per cent or 20 per cent, or even lower, thus bringing the coverage down as low as the row and individual housing types, and when the building itself is properly designed, the apartment house becomes a much more desirable type of housing. In fact, as far as light and air and garden outlook and recreation space are concerned, the apartment building can be superior to the row and single-family type when it has exactly the same coverage; for coverage in practice is only a very rough index of "openness" or "light and air." The greater the scale and the greater the concentration of open space on a site, so much greater is the "openness" of the block. In the case of apartment houses themselves, there are cases where a 55 per cent coverage is actually more "open" than a 45 per cent coverage. Thus, in an apartment house neighborhood there can be, with the same coverage, more spread of lawns and large concentrated playground and recreation spaces, more attractive and better maintained, than in neighborhoods of row or single-family houses which are chopped up into tiny, often untidy, "back yards" each one of which is too small to move about in comfortably, particularly for playing children. For instance, in our studies for the New York State Board of Housing we discovered that a group of four apartment houses covering about 42 per cent of a block 200 x 400 would provide a huge interior garden and recreation space approximately 240 long and varying in width from about 50 to 150 feet. In an apartment neighborhood it has been demonstrated that adequate playgrounds for the smaller children can be provided within the block, where they can play under the supervision of a trained playground teacher. And, be it noted, in the case of buildings which are four and five stories high, covering one-third of the site area, the salary of this teacher will amount to but



PLOT PLAN OF GARDEN APARTMENT GROUP ABOVE
Coverage 9 per cent, with land at approximately 17 cents per square foot

10 to 20 cents a family a week—less than the price of a ticket to the movies. Also, since at the same coverage, the multi-family house has a lower land cost per family than the less intensive types, some of this economy of land can be used to provide separate playgrounds and recreation spaces for the larger children and for adults at a negligible cost per family.

Multi-Family Houses with Ground-Floor Stores

The frequent case of multi-family houses built with stores on the ground floor should be no exception to the principle of requiring low coverages for apartment houses. In these cases, two factors should govern. First, if the potential income of the stores be capitalized at a fair value and this sum be deducted from the total price of the site, the remainder should represent the price of the site for multi-family housing. Both in theory and in practice this deduction will demonstrate conclusively that a very low coverage is possible when apartments are combined with stores in the same building. Second, if the proper planning of the buildings is required, the entrances to the apartment houses should be well separated from the entrances to the stores and preferably placed on a side or residence street. By using ends of multi-family housing blocks on a business avenue or artery, the side streets can be zoned naturally as residence streets. These cases are very important in zoning.

Another advantage in site planning of the apartment house is that it can often be located on topography which is unsuitable for single-family and row sites. If, for example, a site is too rocky or insecure for foundations in most of its extent, or with abrupt changes of grade, but if it contains from 15 to 25 per cent of its area concentrated in a fair building site, it may be an almost ideal site for a garden apartment. This fact could be turned to good advantage in zoning in many towns and cities which contain large areas of difficult topography.

(To be concluded in the February number)

Proportional Representation in Ohio Municipal Elections

ELECTION day, November 8, was an important date in the annals of proportional representation in Ohio. Four cities—Cleveland, Cincinnati, Ashtabula, and Hamilton—chose their councils by the Hare system of proportional representation, Cleveland voted down four proposals for changes in the city charter, three of which would have repealed the manager and proportional representation features, and Toledo voted in favor of a new charter commission. The results, as summarized for THE AMERICAN CITY by the Proportional Representation League, follow:

Cleveland

In Cleveland all the amendments to the city charter were defeated by good-sized majorities. Two of them, the one sponsored by Harry L. Davis, former Governor of Ohio and former Mayor of Cleveland, and the one sponsored by George B. Harris, would have done away with the manager plan of government and proportional representation. The vote against the Davis amendment was 80,148 to 73,732; that on the Harris amendment 113,249 to 34,654. The third amendment, sponsored by Carl D. Friebolin, was for the purpose of repealing the proportional representation provisions of the city's charter. This amendment lost by a vote of 101,318 to 43,910. The fourth proposal, which called for the creation of a commission to make a complete revision of the charter, was defeated by a vote of 73,215 to 53,157.

Cleveland elects its City Council by the Hare system of proportional representation applied to four separate districts, each electing from five to seven members. The election this year resulted in the same party alignment as was secured under the two previous P. R. elections—fifteen Republicans, six Democrats, and four independents. Eighteen members of the outgoing Council were re-elected. Of the 146,813 valid votes cast, 80 per cent actually helped elect councilmen. The counting of the ballots for the four districts was completed in fifteen hours of working time, a saving of 10¼ hours over the time consumed in 1925, and of 18½ hours over that needed in 1923 when proportional representation was used there for the first time.

Cincinnati

The proportional representation election in Cincinnati was the largest ever held on this continent; 131,322 ballots were cast, an increase of 7,231 over those cast in the city's first P. R. election in 1925. The Council of nine, elected from the city at large, is now composed of six members sponsored by the City Charter Committee (the organization which was responsible for the adoption of the city's present charter), two organization Republications, and one independent. The Council is said to be even stronger in personnel than that chosen in 1925 which, with City Manager Sherrill, has made such a splendid record.

Toledo

Of the fifteen members elected to the new Toledo Charter Commission, at least eleven are known to be favorable to a type of government similar to that now in use in Cleveland and Cincinnati.

Ashtabula

Ashtabula elected its Council by proportional representation for the seventh time. A number of good candidates stood for election, and the Council is conceded to be an excellent one. Only three members of the outgoing body were re-elected. The counting of the 5,887 ballots took 7½ hours.

Hamilton

In this city P. R. was used for the first time. Only 2.6 per cent of the ballots cast under the new system of election were invalid. Hamilton citizens generally are agreed that the Council elected is without question the best the city has ever had. Thirty-one candidates ran for the seven places, affording a wide range of choice. The new Council is composed of four "charter candidates," two candidates of the Municipal Ownership League organized during the campaign for the protection of the municipal light plant and endorsed by one wing of the Republican organization, and one of the present Mayor's Democratic organization ticket backed by the other wing of the Republicans. One of the first tasks of the new Council will be the selection of a city manager. The charter candidates elected, who form a majority, are for an out-of-town man.

What Kind of a Civilization Shall We Plan for?

From an editorial in *The New York Times*

THERE are social and technical engineers who believe that we are drawing near to the end of urban concentration; or at least that we should, for the higher human and social values, be drawing near. Sometimes it would appear that we are in danger of falling into an error opposite to that of the early city fathers. They did not plan boldly enough and so endowed us with congestion. We sometimes plan too boldly, and so invite congestion. To speak of six-level highways is to assume the certainty of a Manhattan super-beehive. And that is like painting the devil on the wall. Today there are builders and investors who are wondering whether we have not reached the limit in business skyscrapers and residential towers. Mention six-level streets, and builders will begin to think in hundreds of stories.

Regional and city planning should have some other aim than providing for more and more of the things we have now. The social surveys and technicians must have an ideal in mind. They must decide what kind of civilization they want to plan for. They can work for aggregation or for decentralization. They can decide whether to encourage metropolises of 20,000,000 inhabitants or discourage them. Forces are at work today for the distribution of population. Power for industrial uses can already be sent by wire and may some day be sent by radio. The pleasures of city life are now in very large measure available in the country. With so many of the earlier centripetal forces losing their pull, it is not the boldest kind of city planning that would stimulate human herding.

The World's Foremost Woman Mayors

MARGARET BEAVAN, the first woman Lord Mayor of a British metropolis, was elected to that position by the Conservatives of Liverpool last October on a 27-year record for outstanding achievements in child welfare and health. Notable among her activities were the organization of a £180,000 open-air hospital for children, and the founding of the Liverpool Child Welfare Association. She was founder of the North-Western Federation of Maternity and Child Welfare in Lancashire and Westmoreland, and was delegate to the Central Council representing all voluntary work of Great Britain at the First International Congress on Child Welfare, in Geneva.

Miss Beavan was one of the first five women appointed as magistrates in 1920, and the first woman to take her seat on the Liverpool Bench. In 1921 she was returned to the City Council, and has held the seat unopposed since that time, representing the Liverpool Bench in the Magistrates' Association, which has its headquarters in London.

MISS MARGARET BEAVAN
Lord Mayor of Liverpool, England

MRS. BERTHA K. LANDES
Mayor of Seattle, U. S. A.

BERTHA KNIGHT LANDES, Mayor of Seattle, Washington, has achieved her unique rank in American municipal affairs in spite of the fact that politics do not run in her family. Her husband is Dean Henry Landes, of the School of Science, University of Washington. After her two children were grown, Mrs. Landes plunged into public activities. She acted first on a mayor's unemployment committee, later becoming Seattle's first woman candidate for Councilman, being elected, and for two years (1922-1924) acting as Council President. During the absence of the Mayor she took his place, and in a short week accomplished so much toward restoring law and order in a "wide-open" city that at the next election, in June, 1926, she became Mayor by a record-breaking majority.

Today Seattle's financial health rates high, as does the city's physical health. Street traffic is controlled with exceptional efficiency. And the old bootleg ring is said to be finding Petticoat Government "funny." "Sure, funny like a prison cell!"

Downsittings and Uprisings During 1927 in Municipal Government

Address Delivered as Chairman of the Governmental Research Association at the Recent Annual Meeting in New York

By LUTHER GULICK

DIRECTOR, NATIONAL INSTITUTE OF PUBLIC ADMINISTRATION AND NEW YORK BUREAU OF MUNICIPAL RESEARCH

THE year 1927 has been one of marked importance in the field of public administration. Extremes of progress and of debauchery in government have claimed more public attention than at any other time for a decade . . . The cry from Chicago, "Burn the Books," arouses in our blood the memories of martyrs and inquisitions, of wars for liberty and the struggle for freedom, but it diverts attention from the political manipulation of taxes, assessments, building inspections, and the enforcement of law, and the protection of citizens. Indianapolis has blackened the front pages of our press with its story. A former Secretary of State of New York is charged with disgraceful pin-money peculations. Prohibition enforcement has continued to debauch police administration in scores of cities where the Volstead Act is regarded as an alien imposition. The New York City milk scandals have been thrust to the fore again. The oil leases have at last been shown in their true colors. Some portraits which have been done in oil by the United States Courts will long hang in the Hall of Shame. Is it possible that the crime wave has engulfed our public life?

And there have been disappointments. Boston has not made good the promise of reform which came with the election of Nichols; city manager government in Cleveland has not eliminated partisanship from city business; city manager government in Kansas City apparently has not delivered that metropolis out of the hands of the contractors.

The new, young Tammany of Governor Smith and Mayor Walker has not measurably altered the habits or marks of the Tiger. New York City, with a new deal, with undivided responsibility in the hands of a single faction of a single party, with new powers of home rule, with a friendly Governor and a cowed if not obedient State Legislature, with a spirit of toleration and cooperation on the part of all citizen groups, is only now beginning to move toward a solution of our transit problem, and has made little or no progress in modernizing the organization and the processes of government. The office of budget director and the budget procedure of the city have lagged far behind the standards we have a right to expect of the city which was the pioneer of budget reform in the United States. The office of assistant to the mayor, though in the hands of a capable public servant, has not been used, as was promised, to create an administrative center under the mayor to relieve him of the details of administration. Though Commissioner of Accounts Warren advanced constructive ideas for the reorganization of the Board of Estimate, no step has been made to rid that budget-making body of important spending officers.

The abandonment of Louis Brownlow's syndicated newspaper service on city government must be recorded as deplorable.

The Brighter Side of the Picture

It is fortunate that not all of the events of the past year are discouraging. The sustained forward march of Rochester toward good city government deserves more than passing mention. Rochester has always been a well-governed city, but five years from now, with an able and technically qualified manager, it is destined to be second to none. Though there are weaknesses in its new federal charter, Buffalo has finally abandoned commission government, bequeathing to Newark, N. J., the doubtful honor of being the largest city still under commission government. Cincinnati, with its new manager and his reforms in police, engineering, finance, and personnel administration, is entitled to recognition. The bureaus of research in Rochester and Cincinnati deserve no little credit for their share in these advances, and I am sure that the Buffalo bureau will be heard from in the work of the new government.

Nor is the picture of New York City all black. For the first time in American history, so far as I am aware, public officials, the press, and the man hanging on the strap—which is the New York equivalent for the "man in the street"—have regarded a slight-of-hand budget as ethically dishonest. The credit for this belongs in a large measure to Comptroller Berry, Dr. William H. Allen, the *New York World*, and to the long years of work of the New York Bureau of Municipal Research. It would be a national achievement if smoke-screen budgets with intentionally dishonest appropriations and revenue estimates could be relegated to the limbo of discarded political tricks. Comptroller Berry deserves credit also for the reorganization of his department, which went into effect in January, 1927. Clarence S. Stein, August Heckscher, Mayor Walker, and others have advanced the cause of decent housing during the year and deserve commendation for their work. And in this connection, may I say that I believe that one of the advances of the past year has been the coming down to earth of the city planners, especially in their increasing recognition that city plans must be financially practicable if they are to be more than dreams?

During the past year the *National Municipal Review* has kept to a high standard, and the League's committees, especially those dealing with debt and with the budget, have made notable contributions. Carl H. Pforzheimer, Harold Dodds, and C. E. Rightor have had an important part in this. The development of the Municipal Administrative Service, under Russell Forbes, in a single year with a budget of but $15,000 to a foremost position as a clearing-house, service bureau, and publishing agency for government research, is a striking achievement.

Important Contributions to the Literature of Public Administration

This past year is notable beyond recent years, especially for the large number of first-class contributions which have been made to the literature of public administration, or which have gone into circulation during the past twelve months.

There come to mind especially McCombs' "City Health Administration"; Upson's "Municipal Administration"; "Municipal Finance," by Buck and others; Ridley's "Measuring Municipal Government"; Kilpatrick's "States Administrative Review of Local Budget Making"; The Virginia Survey by the New York Bureau; "The Negro in Detroit," by the Detroit Bureau of Governmental Research; Part II of the North Jersey Transit Commission Report, by Cornick and others; the New York State Crime Commission's Report on Police, by Bruce Smith; Rightor's "Preparation of a Long-Term Financial

Program"; Willoughby's "The General Accounting Office"; Marriott's "The Mechanism of the Modern State"; and Dr. Beard's monumental "Rise of American Civilization," because it is shot through with an understanding of administration, and shows that government rises from and is an inseparable part of life.

The activities of the individual bureaus of municipal research in dealing with their community problems are too extensive to mention here. I doubt if there has been a year when more and better work has been done.

It should be recorded that eight new bureaus of research have been organized this past year as follows:

Research Agencies Established in 1927

Buffalo Municipal Research Bureau—Harry H. Freeman, Director.

Bureau of Research, Kansas City, Kans., Chamber of Commerce—John F. Wilmott, Director.

Michigan Tax Economy League, Lansing, Mich.—L. E. Rowley, Secretary.

Fall River Taxpayers Association, Fall River, Mass.—H. T. Fishack, Director.

Oklahoma City Research Association (reported by Lent D. Upson).

Syracuse Committee on Municipal Research, School of Citizenship and Public Affairs, Syracuse University—S. H. Evans, Secretary.

Bureau of Municipal Research and Information, University of Florida—S. W. Hollingsworth, Director.

Stamford Taxpayers Association, 432 Main Street, Stamford, Conn.

Several other bureaus are in process of organization.

There are now on this continent some 300 men and women professionally engaged for the major portion of their time in government research, not counting those who are dealing with education administration. There are 74 government research agencies in operation spending annually not less than $1,300,000. All of this has come to pass in 22 years, growing out of the idea which R. Fulton Cutting and others gave to New York in a practicable form, and out of that first $10,000 which Mr. Cutting set aside for its support.

EDITORIAL NOTE.—A complete list of bureaus of municipal and governmental research throughout the United States, with the names of the executive officer of the board of trustees and the administrative officer of each, will be published in the 1928 edition of THE MUNICIPAL INDEX.

Floods Demonstrate Need of Larger Vision in Regional and Interstate Planning

By ARTHUR A. SHURTLEFF
PRESIDENT, AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS;
LANDSCAPE ARCHITECT, BOSTON

IF WE learn a lesson from the disasters of the great floods in the Mississippi Valley and more recently in New England, our losses will not have been without substantial gains. The futility of attempting to stop floods in southern New England by local control of the watersheds in that part of the country has become apparent. If millions of dollars are spent downstream for bridges, subways, streets, and industrial plants, all of which are subject to the caprice of floods originating in the upper waters of the stream among villages and towns in which no wise judgment is given to the location of bridges, streets, industrial plants, dams, and embanked roadways, those millions of dollars may be swept away, transportation may be interrupted, and chaos brought to reign once more.

We have also seen the impossibility of meeting flood conditions on the Mississippi by the mere building of higher and wider dikes in Louisiana and nearby states, when the floods themselves developed from a territory embracing about thirty per cent of the area of the Union. An examination of the problems originating from these two floods, which have cost us billions of dollars, shows us that we must plan for the future with a larger vision than that to which we have been accustomed in towns, counties or even in a single state. We must think of very large regions of our country as the natural limits for certain kinds of planning.

The automobile, which brought with it a revolution in vehicular transportation, forced us to a breadth of view in planning which would have been entirely beyond our ken a third of a century ago. More recently the problem of transportation has spread out before us the need of metropolitan planning, embracing towns and villages by the dozen or scores upon the margins of our greater cities. We have undertaken this type of larger planning to escape future waste of opportunity and of treasure. The savings resulting from such planning have led some so-called "visionary" men to urge that we should plan counties and even a whole state, in order to secure on a still larger scale the economies and opportunities which we have learned to conserve or to seize in the replanning of separate villages, towns and cities throughout the country.

Regional Shortsightedness Means Local Waste or Disaster

Whether we will or no, the planning of the physical development of whole groups of states like those forming the watersheds of the Mississippi River has become necessary from an economic point of view and lies no longer in the realm of the visionary. We cannot plan dikes or bridges for Louisiana and determine the location and the level of industrial plants, streets, stores, and dwellings, unless we know what disposition is given to similar works on the other borders in Tennessee, Ohio, Minnesota and elsewhere in that great basin. The local filling-in or damming of any one of the many streams which parallel the Mississippi upon its own natural flood plain is a matter of importance to every community downstream.

The works of man as he builds causeways, bridges, underpasses, dams, and industrial plants which act as dams or as entanglements in time of flood, have become in some respects a greater topographical factor than the denudation of the country by the removal of forests and the consequent more rapid run-off of water. Man himself has become a flood-maker here by constricting the flow of streams, thereby hastening the run-off of water from great areas of street and roof, and all too often by suddenly releasing water through the failure of dams whether built deliberately or, as it were, by chance construction. By "chance construction" I mean to include embankments built for railroads, highways, or drainage projects, which become unstable dams at high water and break with disastrous results both above and below stream.

An examination of the New England flooded area shows in relatively small compass, but in extreme degree, the dependence of the physical plan of one town upon another and, in fact, upon all others. You can't replan one town intelligently without knowing what wise or unwise planning is to be carried out in the towns above or below. If conditions are such that you cannot know the nature of these works, you must plan your own town in a way to "play safe." This means wasteful and perhaps prohibitive cost for abnormally large bridges, abutments, embankments, and dams. This means building only upon very high ground at the cost of wasteful inconvenience. Even then you are not safe unless you have guessed large enough.

During the past twenty-five years we have seen cities and towns which are politically separate, create machinery for carrying out metropolitan improvements under state laws. Similar machinery is now needed on a larger scale to enable states to cooperate under the protection and guidance of national enactments.

Great Value of an Official City Plan When Disaster Strikes

By HARLAND BARTHOLOMEW
City Plan Engineer, St. Louis, Mo.

Airplane view by courtesy of Army Air Service

LOOKING WEST ON FAIRFAX AVENUE, ST. LOUIS, BETWEEN THE TWO CITY BLOCKS TO BE TAKEN FOR PLAYGROUNDS AND RECREATIONAL CENTER

OFTEN a great disaster, such as a conflagration, eathquake or flood, offers profitable opportunities for wholesale replanning and rebuilding of the area destroyed. This is particularly true where city plans are already complete and there is sufficient courage and sound leadership to insist that such plans be followed. The great fire of London and the earthquake and fire of San Francisco are noteworthy examples of great planning opportunities lost because of lack of leadership and the non-official character of the city plan.

Unfortunately (from the city planner's point of view) the destruction wrought by the St. Louis tornado of September 29, 1927, was neither sufficiently widespread nor so located as to be of great significance to the execution of large-scale city planning projects. While several thousand buildings were more or less completely destroyed and many more damaged in varying degree, the area of total destruction was confined to a variable strip approximately two blocks in width, following a diagonal

course through the older residential areas of the city, from three to four miles west of the downtown business center. The district traversed by the tornado is a secondary "blighted" district, composed partly of fine old residence structures now used for clubs and boarding houses, with a sprinkling of apartment houses and in one section a negro settlement. This area is lacking in wide north-and-south streets and in parks and playgrounds. No one thoroughfare was sufficiently affected by the storm, however, to justify any new street-widening project, either as a substitute for projects already contained in the city plan or as a revivifying project for this section of the community. The limited area of destruction also precludes the creation of parks of valuable size.

PROPERTIES TO BE TAKEN FOR THE RIDDICK PLAYGROUND, ST. LOUIS

Enlarging the School Playgrounds

Four grade-school buildings were directly in the path of the tornado. At one of these the playground area was recently enlarged in accordance with the city plan. At each of the other three the city plan recommends the enlargement of the playground space to bring the area up to a normal standard. It has consequently been proposed to enlarge the playground space at two of these schools as follows: At the Bates School to add to the present play area of .83-acre, or 37.6 square feet per child, 1.87 acres, or 97.9 additional square feet per child, making a total playground area of 2.70 acres; at the Riddick School, to add to .57-acre (26.1 square feet per child) 1.37 acres, or 73.84 additional square feet per child, making a total playground area of 1.94 acres.

The third school, West Belle, is used exclusively for colored pupils. There is a very limited area, partly owned and partly leased by the Board of Education, most of the ground area being covered by temporary buildings. These were destroyed, fortunately without loss of life. It is now proposed to close one street and secure a consolidated area of 12.3 acres and to build a complete negro recreation center with athletic field, playground for children of pre-school age, another for children of grade school age, a new school building and a community center building with swimming pool. The possibility of combining these two buildings is also under consideration but is somewhat doubtful because of the reluctance of our Board of Education to undertake out-of-school activities as is done in many other cities.

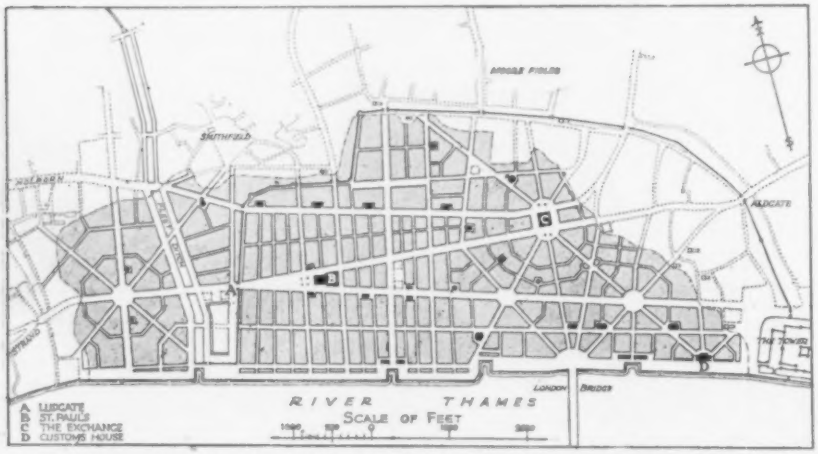
Ordinances for condemnation of the additional property needed for the two playgrounds and for the recreation center have been drawn and will undoubtedly be passed by the Board of Aldermen, so that the required areas will be secured before much rebuilding can take place. While much rehabilitation is going on in some areas, there are two factors which have served to slow up reconstruction. Where property was insured, it will take some weeks to secure accurate appraisals and make settlements. Where no insurance existed and mortgages were outstanding (almost a universal condition in the negro district), the original owner's equity has disappeared, thus necessitating foreclosure and sale, a process requiring several months' time.

WRECKAGE OF THE WEST BELLE SCHOOL, ST. LOUIS, REPLACEMENT OF WHICH WILL BE PART OF A COMBINED EDUCATIONAL GROUP AND RECREATIONAL CENTER

Lessons for Other Municipalities

There is great value in the possession of an official city plan which, according to the manner of its adoption, may at once afford great economy in the execution of projects requiring acquisition of privately owned property, either through immediate prohibition of rebuilding or through enactment of legislation for condemnation which carries with it the prohibition of rebuilding or new improvements within the desired area. The precise character of needed improvements is known and the plans can be put to work, revised if necessary, with very little delay. Assuming that the city plan has been carefully prepared and is basically sound, the danger of ill-advised, inappropriate projects entered into in a moment of hysteria or excess enthusiasm is avoided.

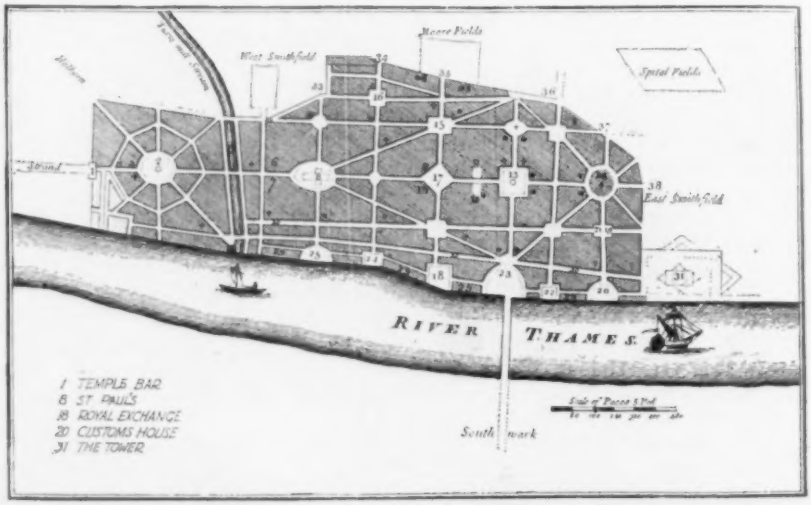
How the City of London Might Have Profited by the Great Fire of 1666



SIR CHRISTOPHER WREN'S PLAN FOR THE REBUILDING OF THE BURNED AREA

WREN'S plan for rebuilding the 436 burned acres, as drawn by royal command, placed the Royal Exchange as the center of the city, surrounded by public buildings. It was "to stand free in the middle of a piazza, from whence 60-foot streets from so many ways should proceed to all parts of the city. Streets of the first and second magnitude [namely those 60 and 90 feet wide] to be carried on as straight as possible and to center in four or five piazzas." Parliament divided three ways on the plan: one group for adoption; one group for rebuilding as before; and a third for a compromise plan. No definite action followed.

THE Evelyn plan, as well as Wren's plan, has surprised modern planners by its adherence to now generally acclaimed principles of city design. In the two there was an identical arrangement of the focal center where the Strand becomes Fleet Street, and from which eight main arteries were to radiate, one of these leading up to St. Paul's Cathedral and from there directly to both the financial center and the north end of the Bridge. At the north end of the Bridge there was the same arrangement of radial streets, while similar systems had their center at the Bank. Evelyn's plan provided a splendid view of Wren's impressive cathedral from both east and west.



SIR JOHN EVELYN'S PLAN, SUBMITTED SIMULTANEOUSLY WITH THE WREN SCHEME

A PRESENT-DAY MAP OF THE SECTION SHOWS HOW OLD UNCORRECTED "DEFORMITIES AND INCONVENIENCES" PERSISTED AND INCREASED

ALTHOUGH "select committees and royal commissions have met and reported with frequency and perseverance during the last century," this now intensively developed section of London shows no more evidence of the Wren plan than of Evelyn's. The rebuilt city perpetuated all the old defects, most of which remain. True, before Wren's death he received a letter calling the fire "infinitely beneficial to posterity," since "by means of common sewers and other like contrivances such provision was made for sweetness, cleanness and salubrity that London is not only the finest and pleasantest but the most wholesome city in the world." Wren's biographer does not record the degree of consolation thus brought to the great man who had seen his dream city vanish into the London fog.

The Airport and the Municipality

By H. M. OLMSTED

Along with the urge for airports that has permeated the country there should be consideration of the broad questions of ownership, control, and the relationship of the airport to the general development of the city.

THE "Spirit of St. Louis" and her extraordinary pilot have swung around the circuit and down into Mexico, and a host of cities from Atlantic to Pacific have vied with one another in tremendous welcomings. The springs of mass enthusiasm have been tapped; and various agencies, public and private, are at work to maintain and direct the flow.

The leading public agency is the United States Department of Commerce, which, through its Aeronautics Branch, has taken a large measure of initiative and is actively concerned in the development of a network of airways for mail and commerce throughout the nation. The establishment of airports or landing fields to serve specific cities is left to local enterprise—either the city government or private persons.

An airport is defined by the Department of Commerce as a locality, either water or land, adapted for the landing or taking-off of aircraft, and which provides facilities for shelter, supplies and repair of aircraft; or a place used regularly for the receiving or discharging of passengers or cargo by air. While there are said to be some 4,000 landing fields of one kind or another in the United States, only about one-seventh can be classed as airports. This number has been growing rapidly. The airport list issued by the Department of Commerce under date of November 1, 1927, contains the following, exclusive of some 400 intermediate and other marked auxiliary fields:

Municipal	289
Commercial	184
Army, Navy and National Guard	81
Department of Commerce	1
Department of Agriculture	1
Private	3
	559
Proposed airports	245

The Federal Government encourages the provision and maintenance of airports by the municipalities, this policy being somewhat parallel to that of the Government with regard to air mail, which was brought through its early stages as a Government enterprise, before turning it over to private contractors when it promised to be self-supporting. It will be noted as to the figures given that the municipal and Government airports are a substantial majority. This is partly due, no doubt, to the fact that air transportation is still an infant industry and an irregular pastime, and the lure of profits has not come strongly into play. Hence, as in many other instances, public initiative has been called upon to lead the way and bear the burden—the National Government as to air mails and airways, and the cities as to airports.

Profiting by Experience with Sea-borne Commerce

The importance of airports to aviation is similar to that of seaports to ocean-borne commerce. Both the air and the sea have room for vast numbers of ships. But without terminals and ports of call equipped to receive and care for them and their loads, ships and voyages will be scarce. Hence the responsibility placed upon the cities is a momentous one for the progress of aviation.

Seaports, almost as old as civilization, have developed by slow degrees. The most favorable sites were early devoted to this use, and expansion could be gradual and according to clearly perceived needs. With airports it seems essential that a tremendously more rapid development take place, with a view far beyond the immediate present. Whereas enlargement and improvement of seaports is waterward as well as landward, airports for land planes, the great majority, are tied up with the land problem; the air is free, as unobstructed as it is likely to be, and hardly susceptible to increase of capacity. Every year of delay in the acquisition of land is likely to add to the necessary expenditure when made; expansion will be difficult and costly, requiring payment for community values, perhaps largely created by the airport itself. And a further urge for taking the long view is the spirit of modern city planning.

The fear has been expressed that many cities will be stampeded by the popular sweep into making heavy expenditures for airports that have and are likely to have no adequate justification; and advice is given by some for cities to save their money and energies unless there is an air-mail service established or decided upon for the city in question, or an air transport line ready to use the port. On the other hand, many, particularly pilots and their employers, are anxious to have as many adequate landing fields as possible. It is said that every community should have its airport, and that traffic will follow, not precede, its establishment.

Undoubtedly there are many municipalities for which an airport, as defined, is either an impossibility, or a white elephant. They are too small, too much off the logical routes, or so near to larger cities that the terminals at the latter are sufficient, or jointly developed airports can be used. But a landing field need not be, or aspire to be, an airport. Expensive equipment need not be provided short of a reasonable expectancy of remunerative use. Size and surface are the main considerations. The smaller the town, as a rule, the less will a suitable area cost, and a city's investment in land, and even in extensive grading, grass-surfacing, etc., need seldom be a waste of money. If time proves that an over-estimate has been made, selling is easy as compared with buying, or other municipal uses can be found. Both airports and lesser landing fields have recreational uses. Large areas are sometimes held for fair grounds with much less frequent use than a landing field would be likely to have.

Public Ownership of Landing Fields Advocated

Air transportation is still in a pioneer stage, and cities and other public agencies are responding to the call to aid in the pioneering. The equipment and maintenance of airways by the Federal Government, and the establishment of municipal airports by the cities, constitute forms of subsidy for the new form of transportation. With sufficient development of air travel and commerce, airports may become generally self-supporting or capable of profit before long; but whatever the national policy as to air mail or air transport generally, any financial prosperity that airports may realize hardly seems to be a reason for turning them over to private hands. The amount of land involved is a large enough factor in itself to make public ownership desirable, for the protection of the community, the transport lines and the traveling and shipping public. The American people have had sufficient experience with community values being capitalized against the public in the field of transportation, both at terminals and on lines of travel, even when land was a gift of the Government, to serve as a warning.

Another reason for considering airports as properly a municipal rather than a private function is the large element of monopoly involved. This arises in turn from the dependence upon land

of large area and of favorable location with respect to surface, distance from urban centers, nearness to other transportation facilities, relative freedom from fog, absence of surrounding obstructions, etc. Such sites are scarce enough in most cities. Coordination and unification of terminals is a serious problem with existing means of transportation, competition in such matters being ordinarily a course of great economic waste. In an experimental enterprise, like air transportation, duplication of facilities would be a particularly heavy handicap.

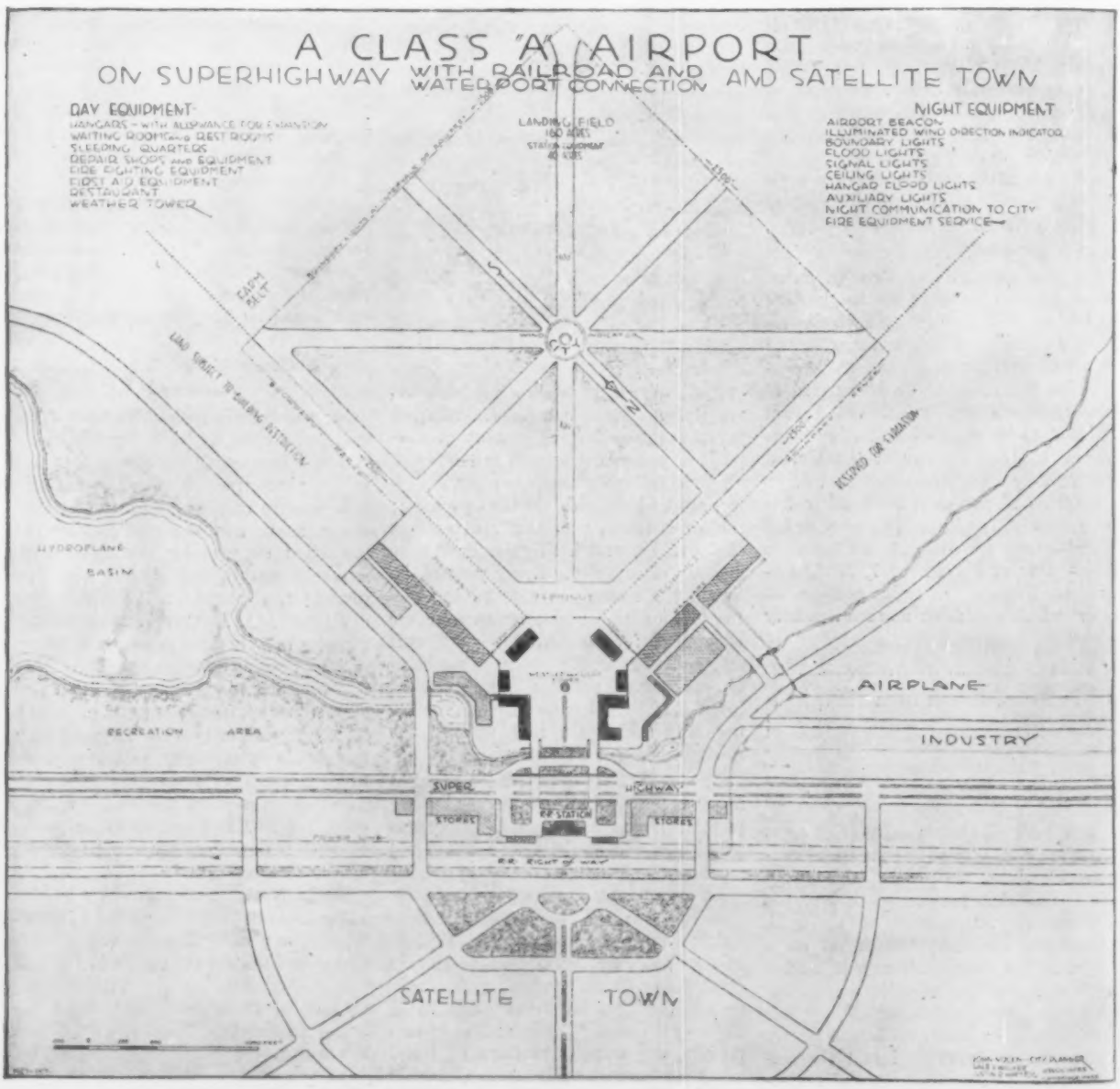
This monopolistic character of airports places a great responsibility upon their operation, in order that fairness to all users may result. The danger of discrimination may not seem great at present, but it should be guarded against nevertheless, whether operation be public, or private under public control.

Although municipal airports are likely to constitute, in effect, a form of subsidy to air transportation for some time to come, there can hardly be a necessity for regarding this as other than a temporary policy. Non-discriminatory charges based upon ability of the traffic to bear them readily would seem to be the appropriate course until the full cost of service, including fixed charges, could be met out of the revenue. This is in fairness both to the city and to other forms of transportation.

How Existing Airports Have Been Established and Are Now Managed

Existing airports have been established in a variety of ways. As the result of a brief study made by the New York State Bureau of Municipal Information, a report was made showing that for 25 cities from which information was obtained, scattered throughout the country and including both large and small communities, the airports were developed by the following:

City council or commission	4
City department or official	7
United States Government (Washington, D. C., and Cheyenne, Wyo.)	2
State	1
Citizen board or committee	7
Chamber of commerce	2
Private corporation	1
State, city and chamber of commerce	1



PLAN DESIGNED BY JOHN NOLEN, CITY PLANNER, AND ASSOCIATES, TO MEET THE FULL REQUIREMENTS OF THE DEPARTMENT OF COMMERCE FOR A CLASS AAA AIRPORT

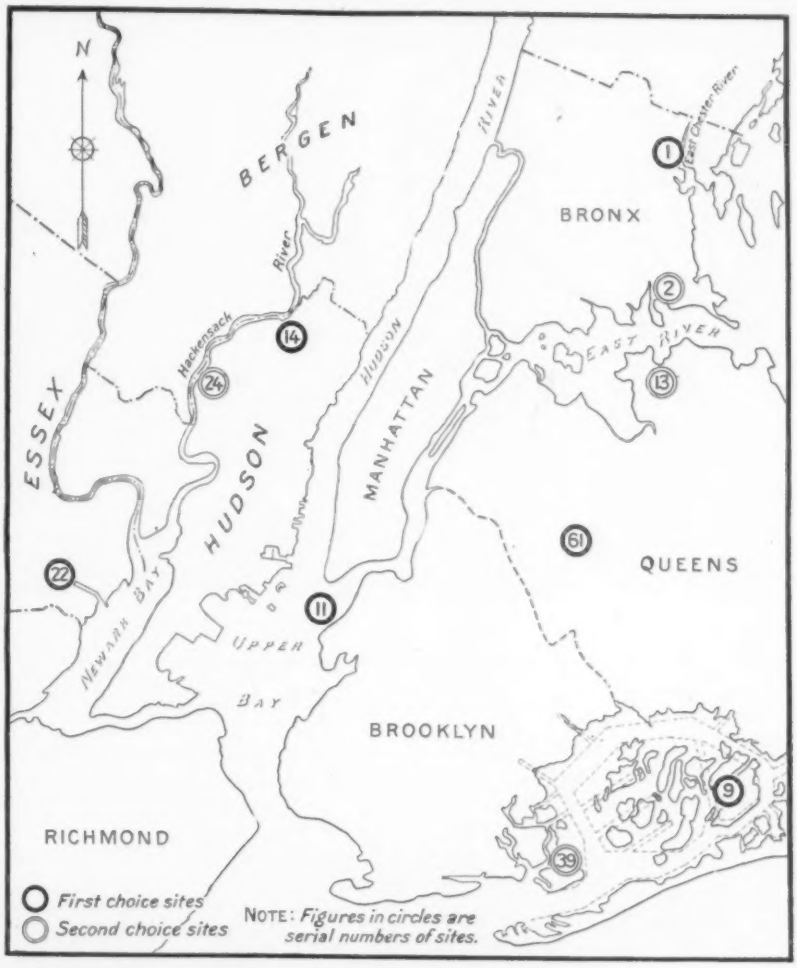
Provision is made for both airplanes and hydroplanes, and the plan provides also for expansion and ample facilities for the coordination of traffic, sites for aircraft industries, and the building of a satellite town. The orientation would depend on local conditions and the prevailing wind

From 23 of these it was learned that the airports were managed as follows:

City council or committee	3
City department or official	10
Special board, under city	2
County and city officials	1
United States Government (Washington, D. C., and Muskogee, Okla.)	2
State	1
Citizen commitee	2
Chamber of commerce	1
Leased to private company	1

The Airport and the City Plan

Whatever the mode of development and of management in any city, the airport problem is essentially of the sort that calls for city planning. The question of location should particularly be handled in the light of a broad city-planning study, to settle, among other matters, whether the site should be as close as possible to the city center, or on the outskirts; what type of locality it should be in or near, from the zoning standpoint, and how zoning of the surroundings should be altered, if at all, on account of the airport and its expecetd future. The general financial status and program of the city must be duly considered in choosing the site. The matter of how extensively to develop it requires study similar to that which the city planner makes with respect to other transportation facilities. Keeping the site and its operation within the control of the city should aid in making a rational, well-ordered development, whereby risks and errors shall be minimized and public benefits conserved.



Fairchild Aerial Surveys, Inc.

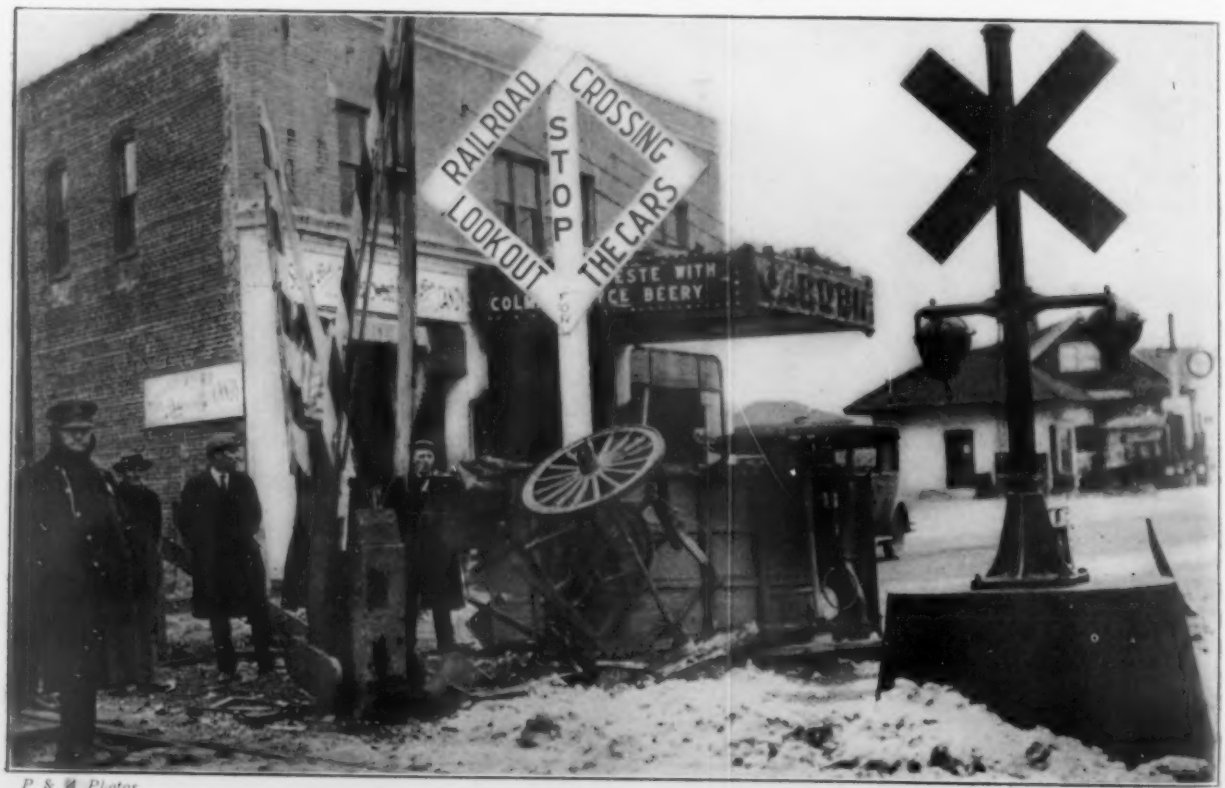
SIX AIRPORT SITES RECOMMENDED FOR NEW YORK METROPOLITAN AREA

On December 20 the Fact-finding Committee, New York Metropolitan Airports, composed of representatives of various federal, state and city governmental agencies, and commercial, labor, engineering, city-planning and aeronautical organizations, made public a report from which the above plan is taken. In the foreground of the photograph at the left is shown Governor's Island, which is site 11 on the map above. Its utilization is subject to consent of the War Department or action of Congress

The Supreme Court and the Careless Motorist

THE United States Supreme Court has emphasized the need of caution on the part of drivers of motor vehicles at railroad grade crossings, in its decision in *B. & O. R. R. vs. Goodman*, handed down on October 31, 1927. The Court said, in part: "When a man goes upon a railroad track he knows that he goes to a place where he will be killed if a train comes upon him before he is clear of the track. He knows that he must stop for the train, not the train stop for him."

Whatever the other implications of this decision, it directs attention to the obvious but often disregarded fact that accidents are bound to happen if the individuals involved do not act upon a realization of the actual danger. The fact that crossing gates and signs are no guarantee against carelessness is evident from the picture below and from the last annual report of the Interstate Commerce Commission, which tabulates 773 deaths and 1,892 injuries at "protected" grade crossings during the year 1926.



P & A. Photos

CHIEF EVERETT W. ADAMS INSTRUCTING THE JUNIOR SAFETY PATROL AT EAST PROVIDENCE, R. I.

Safety Education—The Key to Your City's Accident Problem

By ALBERT W. WHITNEY

ACTING GENERAL MANAGER, NATIONAL BUREAU OF CASUALTY AND SURETY UNDERWRITERS; VICE-PRESIDENT IN CHARGE OF EDUCATION, NATIONAL SAFETY COUNCIL

EXPERIENCE has demonstrated the life-saving possibilities of safety education in the public schools.

The city of Detroit during the school year 1918-1919 had 96 accidental deaths to children. School Superintendent Cody's way of meeting this situation was to put Miss Harriet Beard in charge of organizing instruction in the schools. In the first five years following her appointment, the accident death-rate of Detroit school children dropped 47 per cent, in the face of an enormous increase in the school population and in the number of automobiles on the city streets.

About two years ago Superintendent Scott of Springfield, Mass., became convinced that safety could be taught with advantage in the schools. He went at the matter with characteristic thoroughness, and through a committee of teachers and supervisors thoroughly incorporated safety in the course of study. The year before there had been 10 motor fatalities to children of school age. This figure dropped during the following year to 2. Meanwhile the deaths to children of pre-school age, who therefore did not come in contact with the instruction, increased.

In 1924, Superintendent Hartley of Louisville appointed Mrs. Frances Miner Supervisor of Health and Safety. Mrs. Miner organized safety work throughout the schools, with emphasis on safety patrols. The motor fatalities to children of school age had been 23 in number the year before; they dropped to 14 during the first year of the new plan, and to 8 in 1926.

In Newark, N. J., one of the first cities to organize safety patrols, 37 children were killed in traffic accidents in 1919. In 1926 this figure was reduced to 17.

In Worcester, accidental deaths to children from all causes dropped from 39 in 1922 to 23 in 1923, when a demonstration center for safety teaching was established at the Abbott Street School. In 1926 the total number of child fatalities was 19.

The results in these five cities seem to indicate that accidental deaths to children, from automobiles and other causes, can be reduced at least 50 per cent in any community that will undertake systematic work in safety in its schools. Since there are 19,200 such deaths each year in the United States at present, a saving of 9,600 children's lives is quite within the bounds of the possible.

This is not all, however, for these children at the same time that they are learning how to avoid accidents themselves are getting an attitude of mind that will make them as citizens much more alert to see that, for instance, proper traffic regulations are enacted and enforced.

Even that is not all. The teaching of safety would have had little chance of getting into the schools in spite of these effects if it had not educational value in itself. The strain upon the curriculum is too intense these days to retain, and particularly to admit, something that has only an immediate expediency. The curriculum must be formed of material out of which intelligent character can be developed.

How Safety is Taught

Introducing safety teaching into the school does not mean creating a new subject to which certain hours in the classroom must be definitely assigned. It means, rather, relating the study of safe and intelligent human conduct to all the work of the school; to the regular subjects in the course of study; to games, plays, pageants, debates, club organizations, and other special activities. Teachers who at first hesitated to adopt safety teaching, viewing it as an added burden in an already overcrowded program, are finding to their surprise that it is giving new life and freshness to the old subjects, and that far from being dull and negative in quality, it possesses infinite possibilities of development.

One of the schools of East Orange, N. J., is situated near a dangerous crossing, at which one child has been killed and a number of others have barely escaped serious injury on their way to and from school. Repeated warnings by principal and teachers had no effect. The children continued to disobey traffic regulations and could not be made to see the seriousness of the situation. When

organized safety work was introduced into this particular school, one of the first civics projects of the fifth grade was a study of this important traffic problem. How can we establish safe routes to and from our school, was, in effect, the question to be solved. Maps were prepared, indicating the safe and unsafe crossings. Certain rules for safe conduct were drawn up and issued under the caption, "Safety Nick Says" (Nick is the name of the big traffic officer on duty near the school—a person of tremendous popularity).

Having designated the safe crossings and drawn up the safety rules, the question of enforcement was next to be considered. The answer, obviously, was the organization of a Junior Safety Patrol and the establishment of a Traffic Court to try the offenders. Today the principal feels that a very practical and thoroughly satisfactory solution of the school safety problem has been arrived at. Jaywalking and other infractions of safety rules are practically unknown. Placing the responsibility upon the children themselves and asking their help in solving the problem has succeeded where the discipline of the school authorities had to a large extent failed.

But the fifth-grade civics problem did not stop there. So great was the interest aroused that the more general aspects of street and highway safety demanded attention. How many traffic accidents are happening in our city each year? How do these accidents happen? What city department is responsible for traffic regulation? How do the signals operate? What signal systems are used in other cities the size of ours? Are they better than our system? Finding the answers to these questions involved paying visits to various city departments and to the Traffic Court. Letters were written by the children to public safety departments in other cities and states, and to many government bureaus in Washington. A study of good roads went back to early Roman days, and provided a very interesting correlation with history. After several weeks, when a quantity of material had been assembled, an exhibit was arranged and visitors were invited to view it. The children gave short talks, using maps, charts, photographs and slides for illustration. They discussed in a most capable way their city's safety problem. Is there any question that this sort of education develops good citizens?

Traffic Signals, Games and Plays

In the lower grades various devices are found to teach safety lessons in a delightful and imaginative way. Sometimes a regulation traffic signal is installed in the classroom. As the teacher controls the light changes—from red to amber to green—the pupils learn to interpret and obey the signals. A traffic game known as "The Policeman" is often played. The floor of the school room is marked off with chalk lines to represent the curb, the street-car lines, etc. A child represents the policeman, others are vehicles, and others pedestrians. As the various signals are given by the policeman, the vehicles and pedestrians obey them, singing a little song with the chorus

"Hurrah for the policeman,
Our friend the policeman,
Hurrah for the policeman
Who rules with his hand."

Short plays are a particularly effective medium for safety teaching in all grades. So great has become the demand for these simple dramatizations that the Education Division of the National Safety Council is devoting a large share of its attention to discovering and publishing such material. Frequently these plays are developed in the classroom, or a number of teachers and classes unite in the undertaking. For example, the English classes write the parts; the art classes plan the simple stage settings; the sewing classes make the costumes, while the auditorium teacher has general supervision of the whole affair. These safety plays are often presented before community groups in the interest of various projects for civic betterment.

Cooperation of City Departments

The safety education program functions most effectively when there is close cooperation between the school department and the various other civic agencies responsible for public safety. The teacher must know the causes and frequency of accidents with which her children are likely to meet. Local occurrences, such as a fire, or an accident to a child in school, will give a natural opportunity for the teacher to emphasize its cause, effect and prevention.

The Safety Education Department of the Detroit Public Schools is supplied by the Police Department with copies of all accident reports in which school children are involved. These reports are found to furnish so much first-hand information that they are invaluable. Copies of them are sent by the Safety Education Department to the principals of the schools concerned. Providing data on causes and types of accidents, seasonal dangers, etc., they serve to show what special kind of instruction is needed and what results are being accomplished by safety education.

An instance of the prompt cooperation given by city departments in promoting safety for the school children might be cited. Soon after the opening of the new public library on the main thoroughfare of Detroit, a little girl was killed in front of the library as she crossed the street after leaving the building. The children's librarian notified the Safety Education Department, and the situation, evidently a new hazard, was investigated. Within three days the Board of Public Works moved the sidewalk to eliminate a dangerous jog in the crossing, the Police Department appointed an officer to safeguard the crossing during the hours that school children were found to visit the library, and the schools in the vicinity gave notice to the pupils of these protective measures. Thus the Library Commission, the Board of Public Works, the Police Depart-

THE FORTY PRESIDENTS OF JUNIOR SAFETY COUNCILS IN THIS PICTURE HAVE JUST BEEN PRESENTED WITH THEIR BANNERS WON IN THE HOUSE INSPECTION CAMPAIGN

FIRST GRADE LESSONS IN STREET SAFETY IN PUBLIC SCHOOL NO. 11, NEW YORK CITY

The "Stop" and "Go" signal was made by the manual training classes

ment, and the Board of Education worked together without any red tape or delay to correct a dangerous situation.

Safety Education and Civic Betterment

School safety activities relate themselves to many projects for civic betterment, such as campaigns for fire prevention, health, thrift, better babies clean-up week, and so on. During October last the Kansas City Safety Council conducted its Eleventh Semi-Annual Home Inspection Campaign in the interest of fire prevention. Instruction blanks were issued to the school children. These blanks carried to the parents the following message:

"Ten semi-annual Home Inspection Campaigns conducted in Kansas City since 1922 have brought about a 41 per cent reduction in the number of home fires. Based on an average cost of $427 for every home fire, a total of $1,098,244 has been saved. However, there is still room for improvement. Help make this the most successful campaign by assisting your child to carry out the instructions given below. When a thorough inspection has been made, please sign the certificate, which is to be detached and returned to the school."

School Safety Organizations

The school safety organization, usually in the form of the junior safety council, is one of the most popular and effective methods of carrying safety instruction into the schools. It gives the children a chance to put into practice the principles they have learned in the classroom. It is of great value in training them to realize their responsibility for the safety and welfare of others, and it is this altruistic aspect of the movement which makes the strongest appeal to the adolescent boy and girl.

Cleveland, Toledo, Kansas City, Worcester, Memphis, Erie, Grand Rapids, Syracuse, Louisville and other large cities have a thoroughly organized junior safety council in each school, and a large number of other cities have a council or patrol in some of the schools. Often the safety activities are carried on through a club already in existence, such as a civic club or Junior Red Cross Chapter.

The community safety council has in most cases been responsible for the initiation of the junior safety council in the city school system, though in a few instances the work is fostered and supervised by the school department itself. The community safety council acts as a big brother to the junior organization, often providing buttons, badges and flags; promoting membership contests, publishing a monthly news sheet; and in general giving the advice and encouragement which is necessary if interest is to be sustained.

The duties and activities of the junior safety council vary in each city and often in each school, according to the local problems involved. In almost every case the most important activity is the safety patrol which guards the crossings at all times when pupils are going to and from school; and which frequently is on corridor and playground duty during recess periods. The duties of the patrols, briefly, are: to guard dangerous street crossings (standing on the curb and not in the street); to report impartially violations of the safety rules; to assist younger children at all times; to give "Stop" and "Go" signals to children crossing the street; to see that pupils keep within pedestrian lanes at intersections.

It is the function of the patrol to direct the child pedestrians, but not to control vehicular traffic. The banners carried are not used to flag motorists, but are merely an additional warning that a group of children is about to cross the street. Arm bands and buttons have been the usual patrol insignia, but recently a sort of harness, resembling the Sam Brown belt, has become very popular. It has the advantage of being easily seen from all directions, and presents a very good effect. In some schools the girls in the domestic science classes have made these belts for the patrol members, using heavy white canvas webbing.

School safety patrols began function-

ing in Worcester in January, 1926. Fifty-five public schools and eleven parochial schools are now completely organized. There are some 1,200 boys entrusted with the protection of 35,000 children. It is a striking tribute to the efficiency and alertness of these boys that no children in Worcester have been injured on the way to and from school since the organization became effective nearly two years ago.

One of the most significant results of the patrol work is the respect for law and order which it has fostered. "Cheese it—the cop!" no longer expresses the child's attitude toward the policeman. In a recent contest conducted by one of the local newspapers in Memphis, the school children voted for Officer Pennock as "the person who has done the greatest service for the city during the year." Officer Pennock is the member of the police department whose special responsibility is the safety of school children.

The Weekly Newspaper in Community Leadership

THE man who said he would rather edit a country newspaper than be chief executive of the United States, has edited one for a good many years. He had deeply felt the responsibilities of his "sheet" in its role of interpreter of the community to itself and to a small portion of the outside world. He had withstood the constant pulls against his good fellowship, his civic idealism, his loyalty and trustworthiness as a citizen, and above all his independent-mindedness; and had kept his integrity and the public's confidence. Paradoxically enough, he had been the one person in the community to whom the overburdened had come with their confidences, because the very fact of his silence was sufficient to controvert some trumped-up election-time scandal, or cloak a family's sorrowful disgrace from public gaze. By reason of his position he had been, a little more than anyone else in the community, everybody's friend.

Now that the small-town paper is passing through a state of evolution akin to that through which the one-room schoolhouse went on its way to becoming the consolidated educational center of the section, there are some who feel that its peculiarly influential place in the life of the people is being lost. Scientific equipment has found its way, now, into the remotest print shop; the most obscure paper must play up to its advertising department in ways unheard of in "the good old times"; and motives of efficiency and economy dictate a broadening of territorial influence through consolidation or otherwise.

But the representative community paper is just as responsible as of old to the best of public opinion. It still "gets behind" every movement looking to the general welfare. And more, nowadays the most representative and influential and prosperous element of the small-town press of the country, is actually taking the leadership along many lines of civic betterment. The editor no longer aspires merely to be the most trustworthy man of the community; he feels the need to be also the best-informed and most alert in matters pertaining to the general welfare. W. C. Jarnagin, of the Storm Lake, Iowa *Pilot-Tribune* uttered the *credo* of the modern-spirited editor when he said:

"I am a firm believer in the doctrine that a newspaper grows in influence in direct proportion to its service to its community, that a publisher reaps his reward as the community prospers, and that this reward comes in increased revenue, in prestige, and in increased valuation of his plant as the values of the town rise. * * *

"Let us not forget that the community expects the editor to *point* the way to progress. They expect him to feature the best things in the community and minimize the worst. They have a right to look to the editor in this light, and he is untrue to the trust imposed in him if he disappoints them."

The faith of this Iowa editor-publisher is backed up by works. To give but one instance: For a year the *Pilot-Tribune* devoted prominent front-page space regularly to brief articles on various phases of civic welfare. The city's water plant had failed to keep pace with the city's growth and requirements, and at Editor Jarnagin's request the Health Officer wrote one of these articles on that subject. Result: a $40,000 system of new and enlarged filtration beds.

Just how typical is this policy, may be judged from a discussion of "The Small Community Newspaper" presented by John N. Casey, Assistant Professor of Journalism of the University of Missouri, during that institution's Journalism Week, in 1926, and published as Journalism Series, number 46, 1927. Professor Casey gives detailed accounts of the community leadership programs of a considerable group of smaller newspapers, and briefer consideration to a larger number, including in the former category a description of the Storm Lake paper above mentioned.

The El Reno American, Mr. Casey tells us, maintains a combined community center and museum of Oklahoma Indian relics. This serves as a free public meeting-place for clubs and civic organizations of public service character and, incidentally, justifies itself in saving reporters' shoe leather and expediting news gathering. This is the most outstanding of many community services on the part of the paper. The prestige which it has lent the paper and the town has caused the editor to heartily endorse the adoption of the general idea in other communities, while Professor Casey is of the opinion that:

"The secretary of any state historical society would be delighted to assist the publisher toward giving such a community center the proper local history background."

The Freeman's Journal of Cooperstown, N. Y., as a worth-while piece of community service, raises a Christmas fund for the needy children of the community each Christmas. *The Bellows Falls Times* (Vermont) formed an outing club of 600 members to run a winter carnival. *The Wayne County Press*, of Fairfield, Ill., has for 38 years featured an "Old Home Week" special edition which has given this 50-year-old annual celebration a sort of nation-wide prominence. *The Knoxville Express* (Iowa) played a leading part in ousting a city council and securing for the property owners a reduction in paving costs of nearly 40 per cent. Unsatisfactory contractors have been eliminated and a gang of local men have been employed for three summers laying 7-inch reinforced concrete paving at cost.

These are but a few of the instances given. There are others that might have been cited: of the community paper, for instance, that made a prominent feature of the large group of out-of-the-ordinary industries centered in its locality, thereby giving the community advertising that attracted numerous other industries; or of the newspaper of an abandoned farm and orchard section which among ways of promoting prosperity and efficient agricultural interest, established connections with the state and federal departments issuing printed matter pertaining to modern methods of agriculture, and was instrumental in introducing sheep farming and bee culture on hitherto waste land.

All these instances constitute but a group of notes from a few community programs of "home town" newspapers. There are 12,000 such less-than-dailies published in 8,000 towns and villages with a combined production of 15,000,000 copies weekly read by 75,000,000 readers. When we are wearied of thinking of the yellow journals of American cities, of the tabloids and the other scandalmongers, we can turn our attention to the other kind of newspapers, with their unlimited potentiality for civic forthrightness.

Equipping the Modern Fire Department

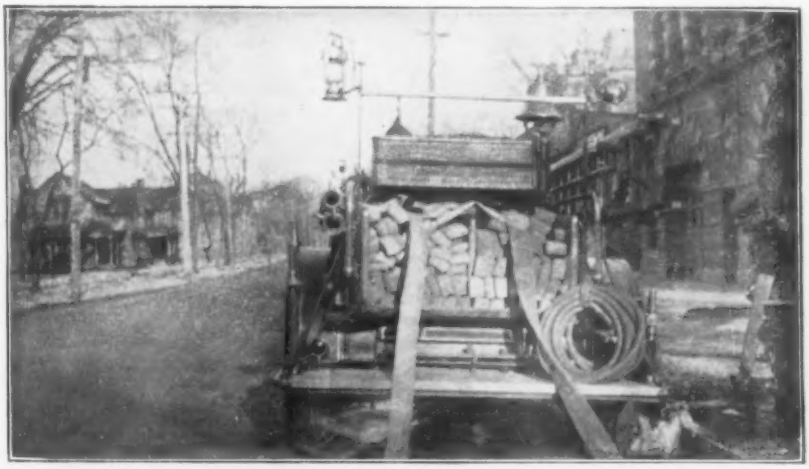
By O. J. SWANDER

KANSAS INSPECTION BUREAU, TOPEKA, KANS.

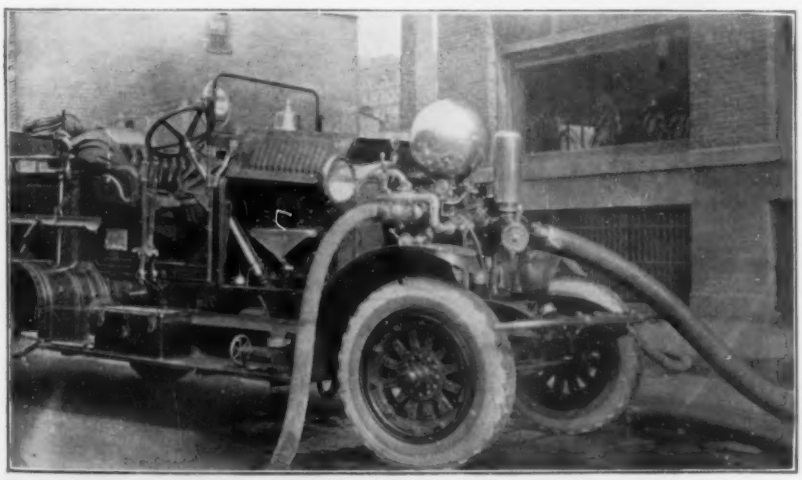
NEXT to the selection of the fire department's personnel a community has no more important fire protection problem to deal with than that of purchasing and maintaining fire apparatus of the proper type. Certainly, fire department work is hazardous enough without having imposed upon it the handicap of makeshift equipment or the lack of proper tools.

But there is such a variety of fire appliances on the market and so many claims are advanced for their respective merits that it is often exceedingly difficult to choose between them. Indeed, there is such a multitude that it is only the large city with enormous values involved that can afford all of them. The real difficulty lies in discerning luxuries from necessities, and the apparatus that is a luxury in one city may be a necessity in another.

The proper apparatus and equipment for a department is largely dependent upon the topography of the city, the condition of its streets, the character of the buildings and their occupancy, and the condition of the water-supply. Thus, it is seen that every city presents a distinct problem, and the proper apparatus for one city may be hopelessly inadequate in another.



COMBINATION CHEMICAL, HOSE AND PUMPING-ENGINE EQUIPPED WITH DIVIDED HOSE BODY



PUMPING-ENGINE TAKING WATER FROM A FIRE-HYDRANT

The Use of Chemical Apparatus

In any city, chemical apparatus should be the main reliance for ordinary fires; in the more efficient departments fully 85 per cent of all fires are extinguished by chemical streams. A chemical stream is easily controlled and in the hands of an experienced operator it is placed where it will be most effective; the quantity of liquid discharged is so small that it can be mopped up before it has seeped through the floor or roof and caused water damage below. At least two 35-gallon tanks, preferably carried on separate pieces of apparatus, should respond to all alarms; a continuous stream is available if one tank is charged while the other is being discharged.

Modern practice favors combining the chemical equipment with other apparatus either in the form of a combination chemical and hose wagon or the so-called triple combination chemical hose and pumping-engine. This eliminates one piece of apparatus and saves a driver; and if divided hose bodies are used, two lines of hose may be laid out as the department goes in, with only slight delay in getting the chemical streams on the fire.

However, when the water system cannot deliver water at sufficient pressure for effective direct-hydrant streams, chemical tanks on pumping-engines are of little value, as the use of the apparatus for pumping from a hydrant precludes its furnishing chemical service. For this reason most chiefs agree that this type of apparatus is not desirable for general installation. Generally speaking, where static hydrant pressures over a portion of the city are less than 60 pounds, chemical tanks responding to that district should not be mounted on pumping-engines.

A practice that has found favor in recent years is that of placing water tanks instead of chemical tanks on pumping-engines and using the tank as suction supply for the pump. This saves the cost of chemicals for recharging and has the advantage of maintaining a uniform pressure, and, if the large hose is connected to the suction of the pump, a continuous supply.

Number of Companies Required

Fire streams from 2½-inch or larger hose lines are required for more serious fires, and proper apparatus for hose or engine companies is necessary. The number of hose or engine companies required may be approximated by the following formulas which are used by the National Board of Fire Underwriters in their "Standard Schedule for Grading Cities and Towns of the United States with Reference to Their Fire Defenses and Physical Conditions."

P = population in thousands.

For cities under 50,000: Number of engine and/or hose companies = $0.85 + 0.12P$.

AERIAL LADDER AND LADDER-PIPE

For cities having a population of 50,000 to 200,000: Number of engine and/or hose companies = 3.4 + 0.07P.

For cities over 200,000 population, the number required shall be adequate to provide proper distribution.

In any city, a motorized engine or hose company should be stationed within ¾-mile, measured by the most direct route, of every point in the mercantile or manufacturing district, and within 1½ miles of every point in the residential section. In some cities with steep grades and poor paving, and divided by rivers or numerous railroad crossings at grade, more companies and closer distribution may be desirable.

Sufficient apparatus to provide for first alarm response commensurate with the normal hazard of the district is necessary; this will usually require not less than the following:

In mercantile and manufacturing districts:

Two engine or hose companies in cities over 4,000 and under 25,000 population;

Three engine or hose companies in cities over 25,000 and under 50,000 population;

Four engine or hose companies in cities over 50,000 population.

In residential sections:

One engine or hose company for cities under 4,000, and two companies for cities over this figure.

Where the water-works system is capable of delivering an ample supply of water at a minimum residual pressure of 50 to 75 pounds, depending upon the size and character of the buildings, main reliance may be placed upon hose companies. One or more engine companies may be required to protect the higher buildings or those too far away from hydrants for effective hydrant streams; or, as frequently happens, parts of the residential section may be at a considerably higher elevation than the mercantile district, and companies in these districts must be equipped with pumping-engines.

Pumping Equipment

Where water is not available at direct hydrant stream pressures, the National Board of Fire Underwriters recommends a minimum engine capacity response to the mercantile district as given by the following formula: engine capacity required $= 680 \sqrt{P} (1 - .01 \sqrt{P})$, where P = population in thousands and for residential sections from 500 to 4,000 gallons, depending upon the character of the buildings.

In regard to the size of pumping units desirable, even for village service two good fire streams should be available, and, under ordinary conditions, this will require an engine capacity of not less than 500 gallons per minute; for service in cities, pumping-engines of 750 to 1,000 gallons per minute are more desirable. Sufficient water from one hydrant is seldom available for engines of greater capacity; frequently the capacity of the water system determines the size of pumping-engine that can be used to best advantage.

Modern fire service requires a pump pressure up to 120 pounds for fires in ordinary buildings, with up to 200 to 250 pounds for fires in high buildings or for suburban service. It is customary in many cities to buy only apparatus of a type that has successfully passed the twelve-hour test conducted by the National Board of Fire Underwriters. This test requires the pump to deliver:

Full capacity at 120 pounds net pump pressure for 6 hours;

One-half capacity at 200 pounds net pump pressure for 3 hours;

One-third capacity at 250 pounds net pump pressure for 3 hours.

Each piece is then bought under the guarantee that it successfully pass the National Board of Fire Underwriters' three-hour acceptance test upon delivery to the city. This test requires the apparatus to deliver:

Full capacity at 120 pounds net pump pressure for 2 hours;

One-half capacity at 200 pounds net pump pressure for ½-hour;

One-third capacity at 250 pounds net pump pressure for ½-hour.

Ladder Companies

A ladder company is not required in villages where the buildings are all one and two stories in height; the 24-foot extension ladder and the roof ladder carried on the pumping-engine or hose wagon is usually sufficient to reach the roof of such buildings. If a city has several three-story buildings, a service truck with the usual equipment of ladders is desirable, and, where there are a number of four-story or higher buildings, an aerial ladder truck should be provided.

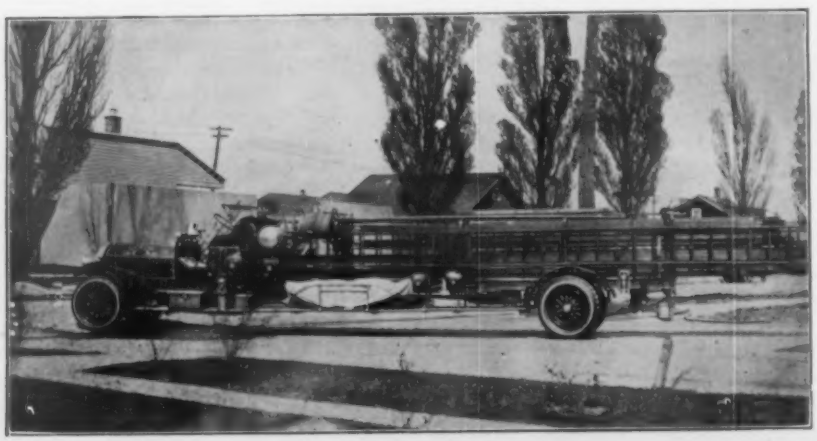
The modern spring-balanced 85-foot aerial ladder can be raised by one man and run out by two in a few seconds, while to perform the same operation with a manually raised ladder requires as many minutes and the efforts of four to twelve men. Indeed, in any department of fair size an aerial ladder will pay for itself shortly in the saving of man power.

Minor Appliances

No department can be expected to employ the best fire methods unless it is well equipped with minor appliances. A list of the more important equipment usually considered essential is given in the following tables of the National Board of Fire Underwriters:

FOR HOSE WAGON OR PUMPER

2 shut-off nozzles, tips ¾- to 1¼-inch
1 open nozzle, tips 1¼- to 1½-inch
1 nozzle holder
2 7-pound axes
1 crowbar, 3-foot
1 door opener
2 plaster hooks and ceiling remover
1 burst-hose jacket



SERVICE TRUCK

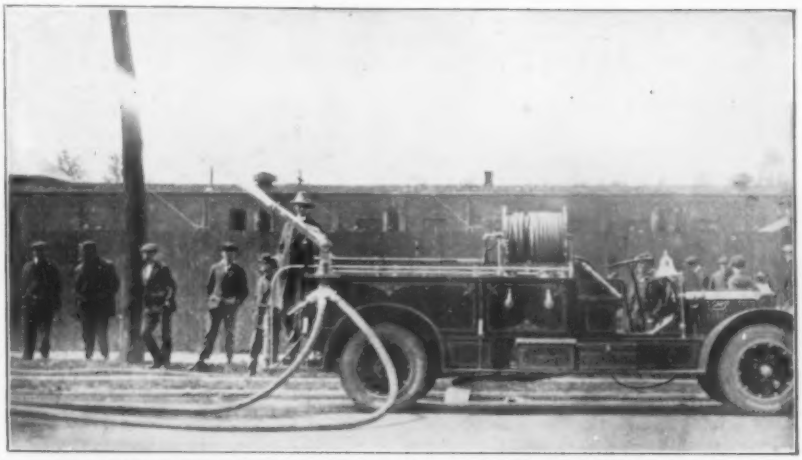
1 pair double male and female connections, 2½-inch
2½- or 5-gallon chemical or one such extinguisher and one hand pump tank
(A foam type extinguisher should be substituted for one of the soda-and-acid extinguishers where oil fires are common.)
1 carbon tetrachloride extinguisher
1 12-foot roof ladder
1 24-foot extension ladder
250 feet 1-inch chemical hose and shut-off nozzle
1 siamese connection
50 feet small hose and nozzles, and reducer from 2½-inch hose
2 waterproof covers
6 hose straps
2 fire department lanterns
1 portable electric flashlight
1 container for extra charge acid
1 bag for extra charge soda
6 bale hooks
2 hydrant hose gates where hydrant streams are used
100 feet ¾-inch rope
2 hydrant wrenches
6 spanners
1 hose shut-off

FOR PUMPERS

2 sections stiff suction, 4- to 5-inch
1 section 3-inch semi-flexible suction
2 double female connections
1 metal suction strainer
1 hydrant thawing device

FOR LADDER TRUCK

4 7-pound axes
2 crowbars
1 door opener
1 claw tool
1 jimmy
1 battering-ram
1 tin roof cutter
2 wall picks
1 cellar pipe
1 distributing nozzle
1 deluge set complete
1 auger, 2-inch
6 hose straps
4 pair ladder dogs
6 brooms
4 buckets and sponges
6 squeegees
1 burst-hose jacket, 2½-inch hose
4 three-tine forks
1 hose roller
4 fire department lanterns, 1 to have red globe
1 portable electric flashlight
2 2½- or 5-gallon chemical extinguishers or one such extinguisher and one hand pump tank
(A foam type extinguisher should be substituted for one of the soda-and-acid extinguishers where oil fires are common.)
2 pompier life-belts
2 marine lights with 5 charges, or equivalent
2 6-foot plaster hooks
2 9-foot plaster hooks
2 12-foot plaster hooks (pike poles)
2 20-foot plaster hooks (pike poles)
1 8-foot cutting hook for metal ceilings
1 12-pound sledge
2 scoop shovels
4 No. 2 shovels
1 wall hook and chain
2 pairs side-cutting pliers with insulated handles
1 pair large wire cutters with insulated handles
1 2-ton jack
4 smoke protectors or gas masks and oxygen helmets
1 surgical kit
1 hose shut-off
1 life net
2 15-foot pompier ladders
4 waterproof covers
2 100-foot lines ¾-inch rope
1 100-foot line 1-inch rope
1 100-foot life line
2 pairs rubber gloves
2 saws
1 ladder-pipe to each aerial ladder
12 automatic sprinkler heads where sprinkler systems are found
2 ice spuds (in extremely cold climate)
6 bale hooks
1 rope gun
1 chimney cleaner (ball and chain)
1 gas and water key
2 hatchets
1 hydrant hose gate
1 1½-inch open nozzle
1 1¼-inch shut-off nozzle
1 nozzle holder
1 siamese
1 "Y" connection



TURRET PIPE MOUNTED ON COMBINATION CHEMICAL AND HOSE WAGON

WATER-TOWER

Turret-Pipes, Water-Towers, etc.

As a fire increases in intensity and size and the firemen are driven from the building, it is necessary to use large quantities of water to cool the fire down and stop combustion. Turret-pipes, deluge sets, ladder-pipes, and water-towers are employed for this purpose. Where sufficient water is available for their effective utilization, turret-pipes and deluge sets should be at hand, and where a number of buildings are four stories or higher, ladder-pipes or water-towers are desirable.

A turret-pipe placed on a piece of apparatus may be used effectively on fires in buildings up to three or four stories in height. Deluge sets may be used in places where it is inadvisable to place a piece of apparatus with a turret-pipe, or in courts, from roofs of adjoining buildings, in the burning building itself or in other inaccessible places. Water-towers or ladder-pipes are effective in buildings from four to ten or twelve stories in height.

Often some special hazard makes it advisable to provide special extinguishing agents. A frequent example is the advisability of providing portable foam generators effective on fires in oil or other inflammable liquids in a district where these hazards are encountered.

As already stated, the closest scrutiny is sometimes required to distinguish the essential from the non-essential. In some cities it will be proper to provide specially equipped salvage wagons, ambulances, floodlight cars, smoke ejectors, and sundry minor appliances. Fire engineers have developed an appliance for almost every hazard and use; fire chiefs and officials should be alert to every need and quick to apply the proper remedy.

Smoky Cities and Babies' Lives

The "summer peak" of infant death has disappeared from the annual charts of infant mortality in England, and summer has become the safest part of the year for babies, according to Dr. Saleeby, chairman of the Sunlight League, speaking at a meeting during the National Baby Week recently held in London. It is now the dark first quarter of the year which is the most dangerous time for infants, but Dr. Saleeby expects improvement there through the operation of the new smoke abatement act which came into force last July, and which he believes will add an appreciable percentage of ultra-violet light to the cities.

Gaging Street-Lighting Effectiveness

The Street Lighting Committee of the Illuminating Engineering Society has been attacking the problem, among others, of reducing the matter of judgment of the effectiveness of a specific street-lighting installation to a numerical basis as compared with an ideal standard, permitting comparison with other actual installations. It has prepared a rating table, subject to discussion and revision, which is presented here with excerpts from the report of the Committee to the 1927 Convention of the Society.

IN the last analysis, the effectiveness of street illumination should be capable of measurement of a character which will eliminate differences in judgment and opinion. The adoption of methods of measurement which will find general acceptance will be a step forward in the street-lighting art. Thus far, however, there is no such means of measurement. Decision as to relative effectiveness is today a matter of judgment. Not even expert judgment is in agreement, while differences in inexpert and unqualified judgment are probably of an even larger order.

Illumination intensities are measured readily. Street-surface brightness has been measured experimentally and perhaps can be reduced to a basis of routine measurement. Determinations have been made of some phases of the effects of glare. If it be assumed for purposes of discussion that any or all of these measurements are accurate and complete, it still remains true that if their indications as to street-lighting effectiveness are borne out by the observation and judgment of competent specialists, they will be accepted, whereas if they differ from such observation and judgment they will not be accepted.

In the further development of this method of appraisal the Committee is therefore confronted with two large problems:

1. The development of acceptable methods of measuring street-surface brightness and glare
2. The reconciliation of all measurements of the qualities of street lighting with competent judgment thereof

By analyzing the problem into its component parts and seeking to arrive at means of gaging effectiveness in each particular, the Committee hopes to develop methods of measurement and to cultivate judgment of its members so that ultimately a satisfactory method may be developed.

In this connection note should be made of the Committee's view that appraisal of the effectiveness of street-lighting systems constitutes a problem which is radically different from the problem of checking fulfillment of contractual obligations in street lighting.

In presenting in the accompanying table the results of its deliberations on this subject, the Committee desires to make it clear that it is not offering a fully developed method of appraisal of the effectiveness of street lighting in which all problems have been solved or one which is ready for public application. On the contrary, it is putting forward this statement of the elements of street-lighting effectiveness and of weights assigned to each in order to make clear the present stage of its own discussions and to invite criticisms and comments from those who feel themselves in a position to advance consideration of the subject. This appraisal system serves to evidence the best judgment of the majority of the Committee's members and indicates the majority view of the elements which should be taken into account when considering street-lighting effectiveness, as well as the relative importance which each assumes in the problem as a whole.

APPRAISAL OF EFFECTIVENESS OF STREET ILLUMINATION

	Maximum Points Alotted— Residence Side Street	Traffic Thoroughfare	Main Business Street*	Specific Rating
Appearance	Weight	Weight	Weight	Weight
Daylight appearance of single unit in its environment	30	20	15	
Daylight appearance of street as affected by the street-lighting system	30	30	30	
Night appearance of single unit in its environment	20	20	15	
Negative—Glare				
Night appearance of street as affected by the lighting system and by the lighting effect produced	20	30	40	
Negative—Glare				
Total	100	100	100	
Value of Lighting at Night				
A. To Motorist				
1. Average pavement brightness	23	25	8	
2. Distribution of brightness	11	14	8	
3. Vertical illumination	11	17	23	
Negative—Glare				
B. To Pedestrian Between Curbs Including all Crosswalks				
1. Conspicuity	11	11	13	
2. Visibility	8	8	10	
Negative—Glare				
C. To Pedestrian on Sidewalk				
1. Horizontal illumination	6	4	6	
2. Vertical illumination	8	5	12	
3. Distribution of illumination	9	6	9	
Negative—Glare —Shadows				
D. To Occupants of Property				
1. Protection afforded	9	7	10	
2. Visibility	4	3	1	
Negative—Glare				
Total	100	100	100	

*Street having heavy vehicular and pedestrian traffic in the evening, such as a street in a retail or theatrical district.

NOTE.—Weights assigned for main business streets have been adopted tentatively since the publication of the report by the Illuminating Engineering Society and are here made available by courtesy of the Chairman of the Committee, Preston S. Millar, East End Avenue and 80th Street, New York.

Relative Importance of Esthetic and Utilitarian Aspects

The ratings for "appearance" and "value of lighting at night" must be considered entirely apart from each other, for the Commitee has adopted no weights for the esthetic elements as compared with the utilitarian elements of street-lighting value. It holds that this is a question which must be decided for any particular street by those responsible for the installation. Relative importance of the two elements will doubtless vary in any case with the character of the neighborhood and the street traffic, as well as with the adequacy or inadequacy of appropriations.

Application of Appraisal Method

In the application of this method of appraisal the best concept which can be formed of an "ideal lighting system" for the street under consideration earns the maximum allotment of points listed

in the table for a street of its class. The "ideal," depending upon circumstances, may be the best attainment of the art at this time, or it may be a higher conception thus far unrealized in practice. In either event, approximation to a consensus regarding the ideal lighting of any street may be attained through careful consideration and interchanges of views. And judgment of any actual installation is likely to be sounder if a concept as to ideal lighting is formed.

Decision is then reached as to degree of excellence to which an installation attains in each particular listed in the table. This is expressed as a proportion of the maximum allotted points.

From the sub-totals of points assigned for each principal aspect of lighting effectiveness, deduction is made of such number of points as is considered to represent the extent to which the effectiveness is diminished by such glare as is present.

Passing Marks

It is considered that a street-lighting system which may be regarded as reasonably excellent under modern conditions should attain to 75 per cent of the total points for each of the four major divisions (A, B, C, and D) of the utilitarian aspects of street lighting. It is the Committee's view that any street-lighting system which does not attain to fifty per cent in each of these important particulars is seriously deficient and in need of alteration to bring it into accord with modern requirements.

Appearance

It will be evident that judgment of appearance of street-lighting equipment and of the street as lighted at night is fraught with much difficulty. Preconceptions and prevailing style introduce difficulties which are not easily surmounted. Nevertheless, it is believed that by organized consideration of these matters and through attempt to reduce preferences to numerical expression, better progress will be made than can be hoped for through unorganized, haphazard consideration.

EDITORIAL NOTE.—The 1928 MUNICIPAL INDEX will contain the Outline of Principles of Street Lighting which the Committee referred to above has also been working upon. Without professing to be the final word on such an open subject, this statement of principles, classified in an orderly arrangement, helps to clarify the problem and assist judgment as to both existing and proposed street-lighting systems.

An English Appreciation of American Street Lighting

A RECENT issue of "Municipal Engineering," published in London, carries the following editorial comment on American street-lighting practice as contrasted with British:

"In glancing through the pages of THE AMERICAN CITY for October, we are reminded that in America street lighting is carried out on a much more lavish scale than in this country, but without glare. We realize, of course, that America is, in these days, more prosperous than we are, but the disparity between the street lighting in the two countries is not accounted for by that alone. We think that the Americans fully appreciate the fact that money spent on adequate street lighting is money well spent in securing the safety of the public and at the same time making the town more attractive and so increasing its trade. The street lighting fittings in use in America are in the main much more ornate than those in use on this side. We have installations that are not, from whatever point they may be viewed, excelled by anything in the States, but they are so few and far between that they do little to leaven the lump of positively ugly and in every way unsatisfactory fittings that comprise the bulk of our street lighting equipment. The general use of diffusing globes adds to the appearance of the fittings and at the same time eliminates glare, so that although the illumination provided in America is of a high order there is less glare than we get from our rather paltry lighting. We have before us as we write some illustrations of modern British electric street lighting fittings, that are all that can be desired, but, generally speaking, they are to be seen only in print, as there is a pitifully small number in use. We are not keen on boosting other countries at the expense of our own, but the progress in street lighting in the States is so great when compared with our own that we feel that still greater efforts are needed to put street lighting in this country on a new basis."

Municipal Versus Public Utility Corporation Purchasing Methods

By ARTHUR M. CRANE

THIS is a side issue to the subject, "Municipal Purchasing Methods and the 'Lowest Responsible Bidder,'" treated by Russell Forbes in the August, 1927, issue of THE AMERICAN CITY. Mr. Forbes commented on an editorial in the June issue of the *Highway Magazine*, claiming that the practice of awarding the order to the lowest responsible bidder, "while it has closed the door to corruption, has also closed it to progress" and that "the lowest responsible bid can usually be depended upon only to yield the lowest degree of utility acceptable." Mr. Forbes advocates giving more discretionary power to the buying official in allowing him to exercise his own judgment in determining which is "the lowest responsible bidder" or the "lowest and best responsible bidder" as stipulated by the charter of Akron, Ohio.

But wouldn't the general extension of discretionary power defeat the purpose of public bidding—described by the *Highway Magazine* as "closing the door to corruption"?

If any individual is to be given authority to say who is the most "responsible" or "best," why should "sealed bids" be submitted and why should they be "publicly opened and read"?

If the principle of "sealed bids," "publicly opened," has the advantages claimed for it, why should it not be universally adopted—at least by public utility corporations? Would it not protect them from the favoritism of some purchasing agents and guarantee bidders a "fair deal"?

By "fair deal" as above used is not meant that the order should be given to the bidder whose figure is the lowest, but that the order be placed on the basis of the original bids—whichever may be selected. The buyer is protected by reserving "the right to reject any or all bids."

A purchasing agent can be absolutely honest with his employer, but quite unfair with the bidders by "playing one against the other." Bidders as well as buyers should be protected. Open bidding would do it. There are a few consulting engineers accustomed to public work who handle their private jobs in the same manner—either having a public opening of bids or giving each bidder a tabulated report of the bids and designating the successful bidder. Why should similar courtesy not be the rule with all engineers and purchasing agents when formal bids are requested?

This writer concedes that it is the inherent right of any buyer, public or private, to spend his money to what he deems the best advantage, and on that premise to select as the "lowest responsible" or "lowest and best responsible" bidder the one most attractive not only in price but in any other respect—appearance, past performance, guarantee, time of delivery, etc.; but he does advocate procedure justifying the formal submission of bids, be it to a municipal council or to the purchasing agent of a privately owned corporation operating a public utility.

In some departments, the United States Government protects itself, and also manufacturers, by requiring contractors to name the make of materials or equipment on which their bid is based. This prevents the successful contractor from "making money off his estimate" and also prevents him from shopping around for the cheapest thing he can buy or forcing down the price of the manufacturer whose quotation helped secure him the contract.

Manufacturers could protect themselves against having their quotations used to beat each other down, by declining to quote those privately owned public utility corporations which will not adopt the open and above-board purchasing methods of public agencies and institutions.

County Road Repair Material Plant

THE township of Logan, Blair County, Pa., completely encircles the city of Altoona, and the resulting heavy traffic gives the progressive township supervisors many problems to meet. For instance, in June an automobile meet was scheduled for the famed Altoona speedway, and Pleasant Valley Boulevard, one of the highways leading through the township to the meet, was in bad condition. The state had been surveying the Boulevard with a view to taking it over, so it had not received the usual careful attention and there were bad holes and broken places, but the unique road material plant which is fostered by the township supervisors made it possible to meet the emergency successfully.

This plant is in the township yards located in Llwesyn, with an elevated road running alongside. It was planned to bring the material in over this elevated road, dumping it into bins, and from there deliver it to the mixer.

A circular steel bin 12 feet in diameter and having a capacity of 80 tons was installed; also a Blystone mixer having a side discharge feeding into a Blystone skip loader, which elevates the mixed material and empties it into the bin. The mix, which is completed in 1½ minutes, consists of 9 cubic feet of limestone chips, 1 cubic foot of river sand, and 5 gallons of tar. In a 10-hour day, 80 tons can readily be turned out.

The entire outfit is electrically operated and is controlled by one man at the mixer. It has been estimated that this daily output, mixed not so thoroughly by hand, would crowd the energies of 30 men.

One of the handicaps considered in planning the plant was that the mix would probably harden in the bins in a short time and could not be readily discharged, but in practice the mix has been in storage for an entire week and yet has fed freely into the trucks. Because of the economy of the operation of this plant, its output is now used for top surface when building new macadam roads.

The Saturday before the Altoona automobile race, which was held on Tuesday, it was decided that Pleasant Valley Boulevard was unsafe for the steady stream of hurrying cars of spectators which the meet would bring. Monday morning found the big steel bin filled to its 80-ton capacity of good road repair material. Fifteen men were on hand, with three 4-ton trucks and one 5-ton truck to put the full 4½ miles of this road in shape. The average haul was three miles. That day the plant put through 120 tons of mix, and with 80 tons in storage in the morning, 200 tons of repair material went into service and the road was made safe for the meeting.

THE LOGAN TOWNSHIP ROAD MATERIAL PLANT AT FORT LLWESYN, ALTOONA, PA.
From left to right are the 1,200-gallon tar tank, wooden bin built on slope of ground and served by trucks, mixer discharging into Blystone skip loader, 12-foot circular steel bin for storage of mix of limestone chips and tar

BLYSTONE MIXER WITH SIDE DISCHARGE DUMPING INTO SKIP AT ALTOONA, PA.
The mix is tar and limestone chips

ACKNOWLEDGMENT.—THE AMERICAN CITY is indebted to A. F. Yeckley, of the Beckwith Machinery Co., Pittsburgh, Pa., for the material on which this article is based.

Costs of Sand-Clay and Earth Road Construction in Canada

THE cost of dirt road construction in Alberta was given by O. A. Davidson, Highway Commissioner, Department of Public Works, Alberta, in his talk before the Canadian Good Roads Association, as amounting to about $2,300 per mile, which includes the cost of material for culverts, pile bent structures less than 20 feet long, riprap and paving. The average quantity per mile in earth construction is 5,200 cubic yards. Mr. Davidson stated that there is no lack of competition on Alberta contracts. The average is five responsible bidders to each advertised project. Unit prices bid remain surprisingly constant when one considers the class of construction. The following has been compiled from operations during 1927 and give a good indication of the value of healthy competition in construction:

Clearing, per acre	$31.36
Grubbing	45.55
Earth excavation	.212
Loose rock	.43
Solid rock	1.42
Overhaul	.05

H. R. MacKenzie, of the province of Saskatchewan, reported the amount of common excavation on earth roads as varying from 6,000 to 8,0000 cubic yards per mile, and the average cost of completed earth roads per mile as approximately $2,500. The average unit prices of the various classifications of all contract work performed during the period from 1921 to 1926, inclusive, and also the average unit prices for the season of 1926 only, were as given in the itemized table below:

Classification	Unit	Average Cost 1920 to 1926 Inclusive	1926 Only
Earth excavation	Cu. yd.	$0.240	$0.213
Loose rock excavation	Cu. yd.	0.716	0.646
Solid rock excavation	Cu. yd.	1.790	1.543
Overhaul	Cu. yd. 100 ft.	0.037	0.032
Riprap	Cu. yd.	2.201	2.026
Gravel surfacing	Cu. yd.	1.065	0.886
Guardrail	Cu. yd.	0.735	0.574
Clay surfacing	Lin. ft.	0.339	0.341
Clearing	Acre	66.159	38.545
Grubbing	Acre	27.639	23.300

State Highway Money for City Streets

By ALBERT B. MARTIN
COUNSEL, LEAGUE OF KANSAS MUNICIPALITIES

THE State Highway Commission has prepared an agreement to be entered into between the boards of county commissioners and the governing bodies of the cities in the respective counties as to the amount the cities shall receive from the county and state roads fund, when it shall be paid, and on what streets it shall be expended.

The gist of this agreement is that the city will maintain the streets that have been selected as a part of or a connecting link in the state highway system; that in consideration of this work by the city the county will pay to the city $250 per mile per year for each mile or fraction thereof of the streets constituting a part of the state highway system, the total sum to be payable in four installments, on January 1, April 1, July 1, and October 1; that the city will keep the money in a separate fund and that all vouchers and expenditures from this fund will be subject to the inspection and examination of the state highway commission so that all work will be subject to the supervision of the State Highway Commission in accordance with the provisions of Chapter 255, laws of 1927.

The provision of Chapter 255, Laws of 1927, under which this agreement is drafted reads as follows: "The boards of county commissioners of the various counties shall annually apportion and distribute to each city within their respective counties from the county and state roads fund, $250 for each mile or fraction of a mile of streets within the city limits, heretofore or hereafter selected by the State Highway Commission as a part of, or a connecting link in, the state highway system. In lieu of such apportionment, the county may maintain the roads of the state highway system through any third-class city in such county located on the state highway system and shall pay the cost of such maintenance from the county and state road fund."

Shall the Counties Pay in Installments?

Several questions arise under the above-quoted statute and the agreement prepared by the State Highway Commission. Is it proper for the county to make payment to the cities in installments? The statute uses the word "annually." It is clear that the legislature intended that the cities should receive $250 per mile per year, but it is not clear whether it intended that the payment should be made all at one time—once a year—or that it might be paid in installments. It seems that the reading of the statute could, without violence, be construed to mean that the $250 was to be paid each year and that it might be paid either all at one time or in installments. However, if it may be paid in installments, there is no limit on the number of installments. It appears that the reason the State Highway Commission proposes to have the counties pay the money in four installments and on January 1, April 1, July 1, and October 1 is that those are the dates on which the state pays the money to the counties. If the counties pay the money to the cities as soon as it is received, the cities will at least be assured of the money, and if the cities do not wish to spend the money as it is received, they may hold it until the entire amount has been received for the year.

The Attorney-General has ruled that a city is entitled to $250 per mile of streets in a city designated as a part of the state highway system and also $250 for the one-fraction of a mile that there may be in a city. In other words, if there is one and one-half miles of state highway street in a city, the city is entitled to $500 per year.

Operation of the Law

John W. Gardner, Director, Kansas State Highway Commission, says in response to a request for information regarding the operation of the law which provides the sum of $250 per mile to be paid by the state to cities for the maintenance of city streets on which state highways are located:

"I am not at this time in a position to give you any definite conclusions as to the operation of this law, as the cities are just now beginning to receive their money.

"However, I am confident that it is going to be a very satisfactory improvement to the towns, more especially to the smaller towns, as a great many of the city officials are now conferring with our department as to the best method of improving such streets as carry our state highways.

"In most of these cities of the third class, our department is maintaining the streets, the cities turning the $250 per mile over to the Highway Department for proper maintenance of the streets. We find this a very satisfactory plan, thereby having uniformity of maintenance both in and out of the smaller towns.

"In the larger cities this fund is being used for marking and repairing such streets as may need the work."

Money for State Highway System Only?

Still another question is, must the city use the money so received on the streets designated as a part of the state highway system, or may it use the money on other streets? It is the contention of the State Highway Commission that this money must be used on the streets designated as a part of the state highway system. Apparently, the reason for this is that the state highway act, Chapter 255, Laws of 1927, had for its purpose the betterment of the highways of the state. Should a city spend all of its money received from the county for the maintenance of side streets, this would in no way work toward bettering the state highway system. The state highway system through cities is not for the purpose of aiding travel in and about the cities, but to aid travel through the cities. The statute says ". . . $250 for each mile . ." The word "for" may be used in two senses here. It may mean that the city is to receive money at the rate of $250 per mile of state highway street, to be used as the city deems best; or it may mean that the city is to receive an amount of money sufficient to permit it to spend $250 on each mile of state highway street. The latter construction appears the more logical for the reason that if the county keeps up the streets in a city of the third class it maintains only the state highway streets and no other streets. Further, suppose Lawrence has four miles of state highway and Arkansas City only one; the first theory would give Lawrence $1,000 to spend all over the city, and Arkansas City only $250; but under the second theory, the $1,000 that Lawrence receives will have to be applied on state highway streets and the $250 Arkansas City receives will likewise have to be used on state highway streets; thus, under the second construction of the statute, one city is not especially favored because it happens to have more miles of state highway streets.

Other Questions

If the streets of a city designated as a part of the state highway system are newly paved and need no maintenance at all during the year, what is the city to do with the money if it be not allowed to spend it on other streets? It is suggested that in such cases, the fund would be cumulative, because at some time the street would need some repair and maintenance and it might be that the $250 per mile allowed per year would not be sufficient to pay for the maintenance.

The previously accumulated fund could then be drawn upon.

Must the money be kept in a separate fund, and must all vouchers and expenditures from this fund be subject to the inspection and examination of the State Highway Commission and its representatives? If it can be successfully contended that the money must be spent on state highway streets, it follows that there should be some proof that the money was expended on such streets, and in such case it would be best to keep the money in a separate fund. The State Highway Commission believes it has power to see that this money is properly expended by virtue of Section 11, Chapter 255, Laws of 1927. This section reads in part: "That the construction, reconstruction, improvement and maintenance of state highway system in any county shall be subject to the approval of the State Highway Commission and under the direction of the county commissioners."

If there is one street in the city which comprises a part of two state highways, does the city get paid double amount for this street—that is, if the street is one mile long and is a part of the state highways Nos. 17 and 21, does the city get $500 or only $250? The rule is that the city shall be entitled to only $250.

If a county elects to maintain the state highway streets in a city of the third class, must it spend $250 for maintenance? In this case at least, it seems that Section 11, Chapter 255, would apply and that the county would have to do enough work to secure the approval of the State Highway Commission. The amount might not be $250, but it would have to be enough to keep the street in such condition as to be comparable to state highway outside the city limits.

If a city does not need the whole $250 per year on a paved street, may the unused portion be applied on the bonded indebtedness created to pay for the paving? It seems clear that it could not be used to reduce the special assessments. The statute does not state what the money is to be used for, whether construction or maintenance, either or both. If the county does the work for a city of the third class it only maintains. It seems the money should be used for maintenance and repair rather than to pay for paving.

ACKNOWLEDGMENT.—Reprinted from *Kansas Municipalities.*

The 1928 MUNICIPAL INDEX will contain lists of the administrative and technical personnel of each of the state highway departments in the United States, a list of county engineers, and a list of city engineers, with data on city paving.

Unloading Trucks at Garbage Dump

THE Sanitation Department of the city of Berkeley, Calif., has devised a quick way for unloading the trucks employed for hauling garbage to the city dump. In the empty truck a gate constructed of heavy wood and held together by two cross-members of 6-inch U-steel is placed at the front end of the empty truck body. The garbage is then picked up and the truck is filled, with this gate in place in the front part of the truck. A heavy chain, extending along the floor of the bed, is left protruding from the rear. When the truck arrives at the dump, a Caterpillar track-type tractor is hitched to this chain and in less than half a minute several tons of garbage are emptied by simply pulling out the gate from the truck, the gate pushing the garbage in front of it. This idea might well be adapted to unloading many kinds of refuse.

When the tractor is not busy unloading the truck, it levels the garbage delivered to the dump and deposits a layer of earth over it. This method of garbage disposal is transforming several acres of soft boggy land into a building site that will be valuable for industrial uses in a short time.

METHOD OF REMOVING REFUSE FROM COLLECTION TRUCK IN BERKELEY, CALIF.. 1. Material being projected from truck by gate. 2. Replacing gate ready for next collection. 3. Caterpillar Thirty pulling gate to discharge refuse

Maintenance of Fine Crushed Rock and Gravel Roads

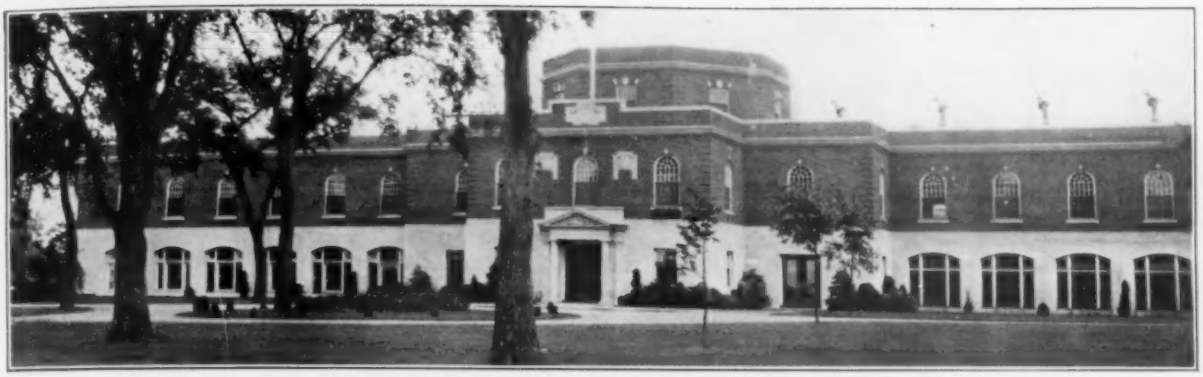
ORDINARY maintenance of this type of road is accomplished with a road drag or with a blade grader or a combination of the two. Ideally, the road should have on its surface a light mulch of about half an inch of loose, fine material to protect the compacted metal. The constant working of the fine material across the road is a most effective precaution against the formation of pits and keeps corrugations to the minimum.

Frequently the available surfacing material is deficient in cementing properties or in fines. Because of such a deficiency, many crushed rock and gravel roads, constructed a few years ago, failed to compact under traffic, and it was later found necessary to add cementitious material. More recently California and Oregon have added filler or binder during construction. Oregon frequently uses about 6 cubic yards of clay binder per 100 feet of 18-foot surface, which is approximately 25 per cent of the top course. This tends to make a firm surface and reduces the loss under traffic. A mulch is not required under such circumstances, and maintenance consists of scarifying and reworking once or twice yearly instead of systematic and continuous dragging. A road so bound becomes more or less pitted and potholed prior to each reworking, and is susceptible to damage during the spring, particularly if the binder is a heavy clay, highly retentive of moisture.

The road metal used varies widely in characteristics. Crushed, hard rock is much preferred, but soft crushed rock, crushed gravel, and even water-worn screened gravel are used where better materials are unavailable.

It has been commonly assumed that a fine crushed rock or gravel road, without clay binder, built of average material in arid territory, is satisfactory for traffic not exceeding 200 or 300 vehicles per day. With exceptionally good material, or under favorable climatic conditions, its field may be extended to 400 or even 500 vehicles per day. R. H. Baldock, Maintenance Engineer for the Oregon Highway Department, estimates that a clay-bound road of this type will successfully carry 600 vehicles per day in arid territory, but opportunity to verify this estimate has been lacking.

The cost of maintenance varies widely according to traffic, climate, and character of material, but even more according to the service standards of the authorities in charge. If an average figure must be set, it may be estimated at $1 per year per average daily vehicle where the traffic ranges from 200 to 500 vehicles per day. This covers ordinary maintenance alone; that is, the preserving of a smooth surface under traffic. It does not include periodical renewals of material.



THE WATER PURIFICATION WORKS AT CAMBRIDGE, MASS.

Five Years' Operation of a Rapid Sand Filtration Plant

By MELVILLE C. WHIPPLE
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FORMER CHEMIST, WATER PURIFICATION WORKS, CAMBRIDGE, MASS.

SINCE April, 1775, the people of Middlesex County, Mass., have looked upon that month as one providing unusual and unexpected happenings. So it was, that on the 26th of April, 1923, the astonished citizens of Cambridge, county of Middlesex, awoke to the realization of striking changes in their public water-supply. Drinking glasses no longer conveyed the odor of the bog, and baths failed to reflect the color of the swamp. The transformation resulted from turning into service on the previous day the new 14-million-gallon water purification works. This new link in the Cambridge water-works system is in series with the old sources of supply on the one hand and the old pumping-station, service reservoir and distribution system on the other.

The story of the operation and performance of this plant, at the time of its opening the largest rapid sand filter plant in New England and at present the only one municipally operated in the state of Massachusets, is of interest. Some of its problems have been pioneer ones in this part of the country; they may serve to furnish guidance for other similar plants that are bound to follow.

Water Sources

The main supply is derived from the Stony Brook catchment area, from which water is conveyed by gravity to the purification works through 7.5 miles of pipe line and conduit. The catchment area covers 23.6 square miles and contains two impounding reservoirs: Hobbs Brook, having a storage capacity of 3,000 million gallons and a drainage area of 6.5 square miles; and Stony Brook, having a storage of 400 million gallons and a drainage area of 17.1 square miles. All the water passes through the Stony Brook reservoir, Hobbs Brook being fed into Stony Brook by open channel when the latter does not furnish an adequate supply. The Hobbs Brook reservoir is very large in relation to its drainage area, but in recent years has filled each season. Stony Brook reservoir is not large enough to retain the flood flows and since 1922 has discharged an average of 2,500 million gallons to the Charles River; this is the equivalent of nearly 200 days' consumption in the city.

In addition to the above-mentioned sources, there is Fresh Pond in Cambridge, on the shores of which the purification works have been built. This furnishes a reserve supply of 400 million gallons from which water is pumped and mixed with Stony Brook water when the latter does not supply the needs of the filtration plant. Fresh Pond has a drainage area of about one square mile. It fills each season from the surplus water that is brought by conduit from the Stony Brook catchment area. Diversion takes place at a weir chamber about one-half mile from the Fresh Pond intake at the plant. Pond water is pumped when the Stony Brook supply is inadequate; it mixes with the latter at the inlet valve chamber of the plant. The practice is to carry Stony Brook reservoir at a low level in the dry months in order to retain the run-off from heavy rains. During the year ending March 31, 1927, it was necessary to pump 775 million gallons from Fresh Pond; 4,090 million gallons was delivered to the purification works by gravity.

Quality of the Raw Water

Stony Brook.—The quality of the raw water from Stony Brook is characteristic of that of the impounded surface waters of New England. Numerous swamps on the catchment area contribute to a considerable organic content and color. Geological structures are such that turbidity is very low and the hardness moderate. The upper waters of Hobbs Brook often have a color of 100 parts per million; after long storage and passage through the reservoir the color of the water discharged is only 30 to 40 parts.

Stony Brook reservoir offers a shorter period within which improvement may take place, but the water of this stream is less highly colored at its sources than is that of Hobbs Brook; consequently the two waters are comparable in organic content and color through many months of the year.

From the bacteriological viewpoint there is not a heavy burden of purification. During many months the number of bacteria will average less than 100 per c.c. at 37° and a few hundred at 20°, with a presumptive index for Bact. coli of less than 10 per 100 c.c. Under the worst conditions the 37° bacteria will average several hundred per c.c., the 20° bacteria a few thousand, and the index for Bact. coli from 25 to 75 per 100 c.c.

FRESH POND INTAKE, FILTER BUILDING, COAGULATION BASIN AND CITY PUMPING-STATION, CAMBRIDGE, MASS.

Such fluctuations are within the realm of probability in water from an area containing a population of about 125 per square mile, to which must be added a considerable number of tourists and pleasure seekers. Attempts to enforce strict sanitary regulations, together with storage of the water, will not effectually prevent or remove the constant menace of contamination. Filtration of this water is justified on the ground of safeguarding its hygienic quality, as well as for other reasons.

The growth of microscopic organisms in Stony and Hobbs Brook reservoirs seldom reaches more than moderate proportions, and tastes and odors are faint. This is largely due to the exclusion of light by the natural color of the water, and in Stony Brook reservoir to the absence of areas of shallow flowage.

The impression must not be gained that the quality of the raw product delivered for purification is markedly uniform. Physical, chemical and bacterial constituents vary widely in the course of a year, and the changes are sometimes "flashy" because of rapid flow through the Stony Brook basin.

Fresh Pond Water.—Fresh Pond water, which makes up about 15 per cent of the total filtered, is different in many ways from that of Stony and Hobbs Brook reservoirs. Although the latter contribute annually a large volume to Fresh Pond, there is long storage in the Pond and it receives from its drainage area water lower in organic content and higher in mineral content. The most striking differences between the two waters are the lower color values, higher alkalinity, higher pH value, lower bacterial content, and greater numbers of microscopic organisms in the Pond water. Before construction of the purification works the physical and chemical properties of Stony Brook and Fresh Pond water were much alike. All Stony Brook water that was used then passed through Fresh Pond. The changes of recent years have been most interesting.

Purification Process at the Present Time

A summary of the purification process at Cambridge may serve to visualize the general conduct of operations at the present time. The details of each step will then be considered separately.

Raw water enters the plant by gravity through a 42-inch cast iron line that runs from the conduit weir chamber one-quarter of a mile distant. When it is necessary to augment the gravity supply, water is pumped from Fresh Pond through a 30-inch line that joins the 42-inch at an inlet valve chamber. This is 100 feet from the coagulation basin.

Coagulating Chemicals.—In the valve chamber there is a screening hopper and an F. B. Leopold dry feed machine, hydraulically operated, for the addition of dry sodium aluminate. This chemical has been added continuously since December, 1926, in dosages varying from 0.15 to 0.50 grains per gallon. Experience indicates that 0.20 grain, or 29 pounds per million gallons is usually the optimum amount.

There is provision in the valve chamber for addition of soda ash or sodium carbonate whenever the raw water alkalinity is deficient for coagulation. It is dissolved in the main filter building and conveyed some 400 feet through a 1¼-inch iron pipe to the 42-inch line in the chamber. This treatment has seldom been employed and will not be necessary as long as sodium aluminate is used. The 0.20 grain per gallon of aluminate supplies about 4 parts per million of alkalinity.

The water then enters the distribution chamber of the coagulation basin, where it receives alum treatment, 1.0 grain per gallon, or 143 pounds per million gallons, of aluminium sulphate. This reacts with the alkalinity of the water and with the sodium aluminate to produce the desired "floc" of aluminium hydroxide. The alum is dissolved in tanks in the main building and conveyed by gravity through 300 feet of 2½-inch lead pipe to the point of application. Coagulation and sedimentation of impurities take place in the coagulation basin, which is divided into two basins that operate in parallel. The capacity is 1.5 million gallons, giving a nominal retention of 2.5 hours.

Filtration and Aeration.—Settled water is distributed to the ten filter beds in the main building from a concrete flume. Each filter bed is 20 x 24 feet in dimension and contains 25 to 27 inches of sand. The combined area is one-eleventh of an acre. Filtration is at the rate of 125 to 136 millions gallons per acre per day. Filtered water is collected in a flume beneath the pipe gallery, from which it flows to an aerator. The latter consists of three troughs delivering water over a sloping surface that is studded with 4-inch riffle-plates. The purpose of the aerator is to assist in removal of carbon dioxide and odors from the filtered water.

Corrective Treatment.—As the filtered water leaves the aerator to pass to the clear-water basin, it drops over a steep sloping surface and then through a sluice-gate. Excellent mixing takes place as a result. At the top of the slope a solution of soda ash is added to correct for corrosive qualities that have been intensified by alum treatment. The amount has varied between 6 and 18 p.p.m. when alum alone was used as a coagulant, and between 4 and 8 p.p.m. with present practice that uses both alum and sodium aluminate.

Chlorination.—A few feet beyond the point of soda application chlorine is fed into the final effluent of the plant. The dosage of chlorine is controlled by a Wallace and Tiernan vacuum-type solution feed machine placed directly above the point of treatment. Disinfection is here employed as a finishing process to take care of any inequalities resulting from other steps in the process that are not working at highest efficiency.

Distribution of the Final Effluent.—The 3.5-million-gallon clear-water basin provides a retention of several hours before the chlorinated effluent passes to the city pumping-station. The period of retention varies with the stage of pumping operations. Ordinarily, a 20-million-gallon pump is used for about 8 hours twice each day. This arrangement at times puts an unequal burden of filtration upon the purification works. Pumping delivers the water to an open service reservoir at Payson Park, Belmont, where about 22 million gallons are stored.

Control of Chemical Feed.—Filter operators make the round of the plant each hour of the twenty-four and check the rate of chemical feed with the Venturi indications of flow. Sodium aluminate is checked by weighing the discharge of the dry-feed machine for one minute. Alum and soda are discharged through calibrated orifices with an indicated setting. An hourly record is made of the drop in alum and soda tanks; chlorine tanks are weighed. A daily inventory is taken of the sodium aluminate in the valve chamber.

Records.—All records of chemical feed, together with venturi readings, hourly readings of losses of head, filter rates and levels of the clear-water basin,

and filter washing records, go to the chemist each day. These furnish data for the calculation of plant performance. All daily and monthly computations are permanently filed.

The Laboratory.—Ample space and full equipment exist for all phases of water examination. Such daily tests are made as will guide the conduct of treatment and furnish a record of changes in quality. Complete analyses are made periodically and research is conducted to effect economies and improvements in treatment.

Coagulation

Coagulation is an initial and a major step in the rapid sand method of purification. Unless it is successfully accomplished, there will arise many baffling problems of filter operation and of effluent quality. Coagulation at the Cambridge plant has always demanded careful study and close regulation. The reasons for this are to be found in the changes in quantity and age of the organic matter in Stony Brook water, and in the mixing of Stony Brook and Fresh Pond waters, but principally in the limited period for subsidence in the coagulation basin. When the rated capacity of the plant, 14 million gallons daily, is approached, as it is during many weeks of the year, the retention is only 2.5 hours. With raw water carrying a high content of organic matter, often in fresh condition, and no turbidity, this period is not long enough. Bottle experiments frequently show that precipitation of alum floc will scarcely begin within 2 to 2.5 hours. The great improvement that could be effected with a larger basin is demonstrable at any time by shutting down one or two of the ten filters and so increasing the period of subsidence.

Disposition of Wash Water.—One of the disturbing factors influencing coagulation in the first years of the plant was the return of all filter wash water to the basin without settling. It was pumped from a receiving basin to a 12-inch perforated distribution pipe laid on the bottom of the basin about 20 feet from the inlet channel. The return coincided with each filter wash and was at the rate of 1,700 to 3,400 gallons per minute, or 1/6 to 1/3 the rate of raw water flow. This lasted for several minutes, resulting in a temporary increase in the rate of flow through the basin, in a disturbance of bottom deposits, and in the addition of a large amount of impurities to the fresh water entering the basin. The pulsating effect produced made sedimentation less complete, and brought an added load upon the filters. The bacterial content of the settled water was increased and odors and tastes were intensified. All the impurities and precipitated alum that were removed by the filters were thrust back upon the basin. The pyramid action rapidly reduced the available depth by deposits of sludge and so decreased the period of detention in the basin. Cleaning was necessary every three weeks.

In January, 1924, the wash water receiving basin was connected with the only available outlet from the plant, an 8-inch sanitary sewer. Experimentation showed that the water from each filter wash could be discharged by gravity through this sewer to the city sewer in 30 to 40 minutes. Comparative trials over monthly periods proved that elimination of wash water from the purification process gave better results in the coagulating basin, improved the odor, taste and color of the effluent, and extended the filter runs from 16.8 to 18 hours. It also reduced pumping charges. Discharge of wash water to the sewer was accordingly made the regular practice. At times of heavy consumption, however, the sanitary sewer is not large enough to take all the water; the pumps are then used to return the surplus to the coagulation basin.

The only advantage of returning wash water is a conservation of 0.5 to 0.75 million gallons daily. If this becomes a future necessity, it can be accomplished by the construction of wash water settling-tanks, the effluent from which would be suitable to discharge into Fresh Pond. Preliminary studies have been made with this end in view.

Chlorination of Raw Water.—Chlorination of raw water at the inlet valve chamber was carried on for several months in 1923-24. The purpose was to reduce the bacterial content of the basin water that was subject to high counts because of the return of wash water. A dosage of 0.3 p.p.m. was found efficacious. The practice was abandoned with the discharge of wash water to the sewer.

It was hoped at the time that the application of chlorine would improve coagulation and possibly decrease the amount of coagulant required. Repeated observations failed to indicate this advantage for chlorine. The reason for this is not clear; it may possibly lie in the fact that the chemical composition of the organic matter is different from that of waters that have shown a positive advantage for chlorination.

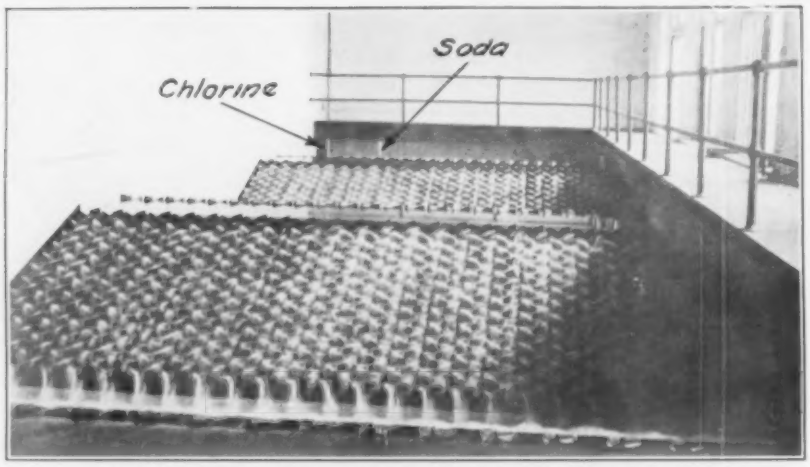
Control of Coagulation by Hydrogen Ion Determination.—It may be said at the outset that attempts to govern the amount of coagulants by the resulting hydrogen ion concentration of the treated water have not shown that the best performance of the Cambridge plant can be secured by this means. Hydrogen ion determinations are made daily for all stages of treatment, and the results furnish information of value, as do other determinations, but sole reliance cannot be placed upon these results for guidance in chemical treatment. Inequalities in raw water due to pumping from Fresh Pond, changes in temperature, and fluctuations in quality and quantity of organic matter, are all factors that dictate the amount of coagulant that is necessary.

The Use of Alum.—Alum alone was used for coagulation up to December, 1926. The annual average amount employed, computed from monthly averages, was 189, 183, and 219 pounds per million gallons for the first three years of operation. Monthly averages varied in that time between a minimum of 165 pounds per million gallons and a maximum of 247 pounds, that is, between 1.15 and 1.73 grains per gallon. The monthly averages of raw water color in the same time varied between 22 and 49 p.p.m.; the effluent color between 0 and 12 p.p.m.

Color removal has never been made the chief aim of operations, but as a matter of observation it has been found that the lowest colors come incidentally with proper coagulation.

The most difficult water to coagulate

FIVE OF THE TEN FILTER BEDS



AERATOR AT THE CAMBRIDGE WATER PURIFICATION WORKS

is that from Stony Brook at times of heavy run-off. Whether this comes in warm months, or, as is more usual, in cold months, the organic matter is fresh from swamp sources and interferes with precipitation of alum. Stored water, whether from Hobbs Brook reservoir or Fresh Pond, coagulates quicker and settles better than water fresh from the streams. It also requires smaller amounts of coagulant and produces a coarse floc that filters out near the surface of the sand.

The most serious problem in connection with the application of alum has been stoppage of the 300 feet of 2½-inch lead pipe conveying the solution. The available head on this line is only 4 feet and there are numerous bends. The solution is roughly filtered and is 2½ per cent in strength, but fine insoluble material gradually decreases the flow through the pipe and necessitates use of a stronger solution. Abundant growths of Leptothrix, a filamentous organism, develop in the tanks and pipe from time to time and greatly aggravate the trouble. Daily flushing under pressure, weekly use of a strong bleach solution, and periodical steaming, are remedies in constant use, but they fail eventually to maintain a desired flow. It is then necessary to employ hand cleaning methods after taking down sections of the pipe.

The Use of Sodium Aluminate.—After experimental runs with sodium aluminate, its use was adopted for prolonged trial in December, 1926, and still continues. During the first few months an average dosage of 72 pounds per million gallons was employed, that is, 0.5 grain per gallon. Later it was found advisable to reduce the amount, and the dosage became 25 pounds per million gallon, or 0.17 grain per gallon. The amount of alum necessary to give proper coagulation with aluminate has varied between 114 pounds and 180 pounds per million gallons, equivalent to 0.8 to 1.25 grains per gallon.

The primary reason for making use of aluminate was a desire to economize in chemical costs. After the experimental plant runs, it was evident that the proportions of alum and aluminate necessary would result in a total cost for coagulant slightly greater than that with alum alone. There was a substantial saving, however, in the amount of soda-ash used for corrective treatment. This resulted from the aluminate increasing the alkalinity of the raw water some 4 p.p.m. and from a diminished neutralization of alkalinity by the lower dosage of alum. A distinct benefit was derived from the new treatment within the plant itself. All the piping, valves and fittings now are exposed to water of lower corrosive properties.

Trouble was anticipated from deposition of the large amount of insoluble constituents incidental to manufacture of the aluminate. These have gone through to the basin, however, where they are handled with the sludge. The feeding of solid aluminate gives rise to serious difficulties at times. Its hygroscopic properties under humid conditions of the atmosphere cause caking and adherence to metal parts of the machine. The product is made nearby, packed in bags lined with sized paper and delivered in truck-load lots. The problem of moisture would be a serious one with rail transportation and long storage, unless metal drums were used as containers.

Experiments in Baffling.—The coagulation basin was built with one underflow baffle placed about 15 feet from the inlet end, and extending from the top to within 4 feet of the bottom. Inasmuch as there is no mixing basin, an attempt was made to promote mixing by replacing the old baffle in one side of the basin with one extending to the bottom and perforated with horizontal slots 4 inches in width and 8 inches apart. This increased the velocity of flow and induced mixing. There was a slightly better deposition of sludge in this half of the basin. Other baffles were tried; the one now in place has 500 rectangular openings 2½ x 3 inches and increases the velocity momentarily from 1 foot per minute to 30 feet per minute. During seasons of good coagulation the deposit of sludge in this side of the basin is considerably heavier and more compact than in the side containing the original baffle. There is no indicated difference when coagulation is poor.

Basin Cleaning.—Normal conditions of operation require cleaning of the coagulation basin about once in four weeks. In the early spring the period of service is eight to twelve weeks; coagulation and sedimentation are then slow and the burden of removal is put upon the filters. There is a deposit of approximately 6 feet of sludge, equivalent to 70,000 cubic feet, or 525,000 gallons. It has a vegetable and earthy odor in winter; in summer, decomposition often gives it a foul odor. Analyses made in winter show total suspended solids to be 3,200 p.p.m., volatile suspended solids 1,800 p.p.m., and fixed suspended solids 1,400 p.p.m. Thus the sludge contains a high percentage of organic matter; it has a low gravity and flows freely.

After drawing off the top water to Fresh Pond, the sludge is pumped to the city sewer, and the basin is flushed with a fire-hose. One side is cleaned one day, the other the next, thus enabling filtration to be maintained during the process. Examinations of the city sewers, which are laid on a flat slope in the vicinity of the plant, show no deposits or silting.

Filter Operation

The filters were constructed and have been operated largely according to general practice for rapid sand plants. Each bed is a separate unit for all purposes, and is equipped with hydraulic valves, venturi flow meter, venturi control, and indicating and recording gages for loss of head and rate of flow. One special feature is the Wheeler filter bottom. There are 9½ inches of gravel of seven sizes and 27 inches of sand. No failures of structures have been noted and no displacement of the Wheeler bottom or gravel.

Filter Sand.—Specifications called for 27 inches of sand. Beds No. 8, 9, and 10 were filled with bank sand from Wilbraham, Mass. A railroad embargo, due to the coal situation, made it necessary to obtain sand for the other beds from local stocks. Ipswich River sand was selected, although it contained some 12 per cent of fine material that had to be scraped from the beds after washing. A few months after starting the

plant, about 2 inches of fine material was scraped off and an equal amount of coarse Plum Island sand added in an endeavor to increase the periods of filter service. Stock sand from these three sources had the following sizes:

Sample	Effective Size	Uniformity Coefficient
Wilbraham	0.38-0.41 mm.	1.76-1.91
Ipswich River	0.31	1.52
Plum Island	0.66	1.48

The average effective size of sand for the plant was originally 0.38 mm. It is now 0.47 mm.

Rates of Filtration.—Rates of filtration have naturally varied with consumption, the range being from 118 to 136 million gallons per acre per day. The average daily volume of water filtered has exceeded 14 million gallons in 3 different months and has been more than 13 million gallons in 29 months out of a total of 51 months of operation. Considerable difficulty has been experienced at times in keeping pace with consumption. A longer period of subsidence in the coagulating basin would give relief by lightening the load of purification placed on the filters.

Periods of Filter Service.—Periods of filter service average from 8 to 22 hours, being shortest in summer and longest in the winter and early spring. Summer brings raw water that coagulates with a coarse floc; the floc forms a sticky, compact coating on the sand surface and offers resistance to filtration. Water fresh from stream sources produces a fine "floc" that penetrates the sand, offers less resistance to filtration, and tends to break through the filters as head losses increase. Algae in Fresh Pond water also contribute to shorter runs in the summer, especially if they are of the blue-green varieties. Diatoms have less effect.

The stored water of Fresh Pond coagulates easier and quicker at any time of year than does Stony Brook water. For the past two years about 4 million gallons daily have been pumped from Fresh Pond in cold weather when coagulation is poorest. A coarser floc is obtained that filters better and prevents breaking. Without this procedure it is necessary to stop filter runs at 6 or 7 feet loss of head instead of the usual 8.5 to 9 feet. There is no question that finer sand would better serve winter conditions, but in summer it would be impossible to meet the maximum demand for water. The first summer of operation demonstrated this fact.

Filter Washing.—Filter washing calls for the use of some measures that are not commonly employed by plants. At the end of a period of service the water on the filter is drawn down below the surface of the sand. This practice traps a certain amount of air that is advantageous in breaking up the surface of the bed when wash water enters. The ordinary method of drawing water down to the level of the troughs before washing allows masses of sand to come dangerously near the crest of the trough when washing begins; furthermore, when this is done, washing is not as complete in a given time.

Filtered water, pumped from the flume to a steel tank, is supplied by gravity for washing. The velocity of wash water builds up gradually and is held constant by venturi control, thus doing away with hand control and avoiding excessive velocities. The Wheeler bottom provides a very uniform distribution of water.

Experience has dictated the necessity of thorough washing to prevent building-up of mud banks and mud balls. The final wash water is therefore clean in appearance. An expansion of sand approaching 30 per cent is necessary and a washing period of 2½ minutes at maximum velocity. To obtain an expansion of 30 per cent with the size of sand used, requires a vertical velocity of 27 inches at a temperature of 70°F. In the winter, with temperatures near 38°, the viscosity and lifting power of the water is much greater; 30 per cent expansion is then obtained with a velocity of about 20 inches. The use of this lower velocity has resulted in an economy of 150,000 to 200,000 gallons of wash water per day during the coldest months. Intermediate velocities are employed for spring and fall.

The monthly average of wash water during the past year has varied between 2.1 per cent of the total filtered in the month of February, and 6.3 per cent in the month of November.

Sand Shrinkage and Cracking.—The phenomenon of sand shrinkage with development of cracks along the sidewalls has been observed annually at the Cambridge plant. It is most pronounced in summer and practically absent in the winter. At its worst it is accompanied by fine cracks over the sand surface; these develop toward the end of filter runs. Shrinkage from the walls allows a large amount of water to pass downward at the edges of the bed; deposits of alum precipitate and organic matter build up rapidly into banks, bind the sand grains together, and make hard masses that are only partially disintegrated by the washing process. The trouble was very acute during the first summer of operation, shrinkage cracks developing 3 inches in width and 12 inches deep. Remedial measures have since been developed.

Strange to say, coagulation is at its best and the filtered water is free of turbidity and color when shrinkage is at its worst. In our opinion, the coarse floc is taken out on the surface of the sand and forms a compact, sticky blanket that resists the flow of water and holds the sand grains together, so that the whole upper sand layer is compressed and pulled away from the walls. High temperatures may also play a role by modifying the physical properties of the alum precipitate, making it more gelatinous. With the arrival of high-colored water and the formation of a fine floc, conditions rapidly improve. Shrinkage has been slight during the past summer when high-colored water has resulted in coagulation with finer floc.

The 20° bacteria in the filtered water have usually been high in summer, often reaching several hundred per cubic centimeter and exceeding the number in the coagulated water. The source of these bacteria is in the sand of the filters. They are too numerous to represent water poorly filtered as a result of shrinkage. It is possible, however, that shrinkage and cracking have resulted in the lower layers of sand becoming dirtier than usual, and that opportunity has thereby been provided for development of bacteria in the beds. Chlorination has effectually disposed of these bacteria in the effluent, 0.25 p.p.m. of chlorine being enough to give a nearly sterile effluent.

Bacteria counts on filtered water have been low during the present summer. The condition parallels the reduced prevalence of shrinkage cracks and the high organic content and poorer coagulating properties of the raw water.

Special Treatment of Beds

The routine washing of beds with high velocities and prolonged application of wash water does not suffice alone to keep the sand clean and to prevent caking and the formation of sand balls. Two special methods of treatment have been found necessary to maintain satisfactory conditions, hand raking around the sides, and caustic soda treatment.

Hand raking is carried out every ten days, one bed being so treated each day. This practice requires two men, each of whom handles a rake with 10-inch tines set at right angles to a long wooden handle. From the walls of the filter the rake is worked up and down in the sand during a wash. The mechanical agitation effectually breaks up the mud banks that form along shrinkage cracks. These banks do not form in the center of the beds. Conditions at Cambridge are not unusual for rapid sand filters. Reports have come from other plants of various methods devised to increase the agitation that is provided by simple washing with water. These attempts recall former practice that made use of the air wash and mechanical stirrers.

Caustic treatment is intended to take care of mud balls and deposits on the

sand grains. The procedure is to wash a bed and leave about 12 inches of water upon it. Dry caustic soda is then added in an amount to give a 0.25 per cent solution. The solution is drawn down into the sand, and the bed allowed to stand over night. On the following morning the solution, at that time dark brown in color, is filtered to waste and the bed is washed. Sometimes the surface is thinly scraped. It is necessary to use caustic treatment once or twice each year. It disintegrates mud balls, dissolves aluminium deposits, and loosens adhering organic material from the sand. The latter is always visibly cleaner after treatment.

Beds No. 1 and 2, particularly No. 2, have given more trouble from accumulation of dirt than the others. This is due to masses of alum floc and organic matter that roll along the settled water flume, much as dust balls roll along a smooth floor. The material is disgorged at the end of the flume upon these two beds. The masses are often large enough to resist expulsion from the sand during washing. They tend to bind the sand grains together and so cause caking. The trouble could be largely eliminated by a blow-off at the end of the flume. It is now very difficult of cleaning.

Aeration

The riffle-plate aerator is not a particularly efficient type, but it does effect a partial removal of carbon dioxide and of odors. At the same time the oxygen saturation is increased.

ACKNOWLEDGMENT.—From a paper read before the New England Water Works Association.

(To be continued in the February issue)

Maintenance Costs Versus Carrying a Bond Issue

By N. T. VEATCH, JR.
CONSULTING ENGINEER, KANSAS CITY, MO.

JACKSON COUNTY, MO., in which Kansas City is located, is now spending annually on the repair of roads nearly three times as much as the interest would be on a bond issue of $6,500,000 for a system of permanent roads. The bonds are recommended by the engineers appointed to examine the roads and make recommendations for their improvement.

The road system of Jackson County consists of some 350 miles of hard-surfaced roads. These roads have been repaired and resurfaced from time to time and in recent years have been given a bituminous surface, a large part of the work being what is called a "mat coat." This mat coat consists of a thin layer of asphalt or tar spread over the surface of the old macadam. Some of the roads have been resurfaced with a new layer of stone and asphalt or tar applied in several treatments.

That these roads are entirely unsuitable for present traffic conditions is quite evident and can be readily appreciated by anyone traveling over any considerable distance in the county. The new state highways are excepted in this statement.

A WATERBOUND MACADAM PAVEMENT ON THE OUTER BELT ROAD IN JACKSON COUNTY
This is the type of road to be replaced with higher-grade paving

Jackson County is confronted with what is practically an impossible situation. There are some 350 miles of what has been aptly termed "pie crust" roads, clearly inadequate to stand the demands of modern traffic. The cost of maintaining these roads in fair condition is almost an impossibility and certainly financially undesirable, as it is quite evident that the amount required to properly maintain them would soon exceed the amount that can be raised by taxes.

Jackson County is covered with excellent farms, all well improved and many of them nationally known as examples of improved farms. Close to Kansas City large areas are devoted to truck farming, florists' establishments, orchards, etc. It is especially true along the Big Blue and in the Missouri Bottoms near Courtney and Atherton. Dairying is an outstanding industry in the county. Generally speaking, the rural sections of Jackson County are unusually well developed, and the county, including Kansas City, can well afford to construct a complete highway system suitable for modern traffic. Prudence seems to call for its construction at the earliest possible time.

The present County Court, realizing the seriousness of the road situation, has had a careful investigation and report made, outlining the best means of giving the county an up-to-date highway system with the smallest cost to the taxpayer. There is no question but that the most feasible way of obtaining these

A CONCRETE PAVEMENT ON MISSOURI STATE HIGHWAY NO. 50
This is the type of pavement to be used in the Jackson County paving program

results is by a bond issue of $6,500,000 and building the roads as quickly as possible, thereby cutting out a large part of the maintenance cost on the present roads. The contemplated system of highways would undoubtedly place Jackson County in an enviable position among the counties of this as well as many other states. It would connect up all the state and national highways with the main county roads and with the main trafficways existing and proposed in Kansas City.

Nearly $900,000 is being spent annually for road maintenance in Jackson County. This is excessive and the results unsatisfactory. A large part of the macadam roads of the county are not of sufficient thickness to carry the heavy traffic. Hence, they cannot be maintained in a satisfactory manner even at the excessive cost of $1,000 to $1,500 per mile per year.

The county will continue to develop very rapidly, and many miles of new road are being added annually. The volume and weight of traffic also show a very great annual increase. It is therefore evident that the maintenance costs will increase each year and the maximum levy, 25 cents, will necessarily be reached immediately unless a very large percentage of the present macadam roads are rebuilt with a more permanent material.

The building of the 223 miles of road as recommended and contemplated will give the county a comprehensive road system well coordinated with the state highways and the trafficways of Kansas City and will result in a maintenance saving on these roads that will equal the annual interest charge on their cost. This feature should appeal to the pocketbooks of the taxpayers.

The Prince of Good Sports Makes a Plea for the Other Fellow's Play

THE playing-fields of the world are constantly calling to him, and the combined diplomatic services of all countries are required to keep him from having to play on them all at once. It is part of the penalty of being such a public idol as the Prince of Wales has always been. It was, therefore, in a (to us) unfamiliar role of simple human being and British citizen that he lately gave a radio talk with all England "listening in." This talk was a rousing plea for the little kid who loves games as much as anybody, but hasn't anywhere to play them. All such youngsters, he told his fellow-countrymen, ought to play for the fun's sake, for the sake of their health and their future efficiency as citizens; and they ought to play in the interest of developing a certain characteristic morals of which he, as he described it, must have seemed to his auditors a fitting embodiment. He said:

"It is hard to put a name to it and yet we all recognize it—the value of games, and especially of our British team-games, for creating and developing that sense of fair-play and justice which is admittedly so characteristic a trait of the British race; for developing the spirit of unselfishness and 'playing for one's side' rather than oneself; for developing qualities of command and leadership; for developing patience, endurance, good-temper and self-control."

Giving this talk, the Prince declared, was doing a little "job of work" for his brother, the Duke of York, then en route from Australia. The Duke is President of the National Playing Fields Association, and the occasion was a drive for a million pounds "to give every boy and girl in England and Scotland a real chance to play."

"I am just as keen on this movement as he is," said the Prince of Wales. "We all must be. The very word 'playing-fields' is a picture-word, and the picture that leaps to the imagination is one of green fields and brightness, eager activity and strenuous effort, and all in an atmosphere of friendly enjoyment and good spirits. I don't know any side of English life that yields a truer, more characteristically English picture than that of an English playing-field—all alive with its games and its players. And there are no fewer than four million boys and girls from whom are being withheld all the great benefits which games can bring to them. It's no good urging our boys and girls to play games if they have no fields to play on."

The future monarch of Great Britain ended with an urgent appeal to everyone to take a hand in the present effort of the National Playing Fields Association to the end that no boy or girl shall be able to say, "I have nowhere to play."

The National Playing Fields Association was launched in 1925, with the personal interest of the King and the royal family back of it, and the active cooperation of some of the most prominent organizations and individuals in England. It has already made marked progress along several lines: making surveys of existing facilities, concentrating on and filling in the gaps; cooperating with local authorities in their programs; and keeping in touch with town planning proposals to ensure the reservation of adequate future open areas. With the active cooperation of the press, nation-wide interest in this vital problem has been aroused and already hundreds of acres have been added to public play.

Great Municipal Garages Advocated to Relieve Street Congestion

ADVOCATING municipal construction and control of great buildings for parking space, Dr. Carol Aronovici, city planning consultant, of Berkeley, Calif., told members of the City Club of Los Angeles at a recent meeting that such a plan would automatically relieve traffic congestion and eliminate the necessity for downtown street widening programs.

"A ten-story building, covering two acres of land, will accommodate four thousand cars, or the equivalent of five miles of parked cars on both sides of the street, assuming that each car occupies only fourteen feet of space," said Dr. Aronovici. "Assuming that a large city has forty miles of street area, a series of parking structures such as we suggest would take care of all necessary parking facilities. By efficient organizations, all cars in the downtown district could easily be parked for ten cents per car a day, or for five cents for shorter periods. I believe this would be an adequate producer of revenue to pay for both the investment and the administration.

"The business man who goes to his office for the day has no right to use the streets for all-day parking purposes,' said the speaker. "Until and unless the city administration provides ample parking space in special buildings, the downtown business buildings should provide such parking facilities in the same way in which they provide elevators, heat and light service. The rental might be adjusted to meet cost of extra investment in building and the service cost."

Water Department Gives Field Demonstration

A Feature of the Recent San Jose Meeting of California Section, American Water Works Association

At the annual meeting of the California Section of the American Water Works Association, held at San Jose, and attended by delegates from California, Oregon, Washington, Nevada, Arizona, New Mexico, and British Columbia, a practical field demonstration of various water-works methods and practices was staged. This exhibition was directed by Louis L. Farrell, Superintendent, East Bay Water Co., who brought equipment and men to San Jose from his headquarters in Oakland.

Photographs 1 and 2 on the following page show methods of making an unusually large tap on any type of steel or wrought iron main where conditions are not favorable for shutting down. These illustrations also show the use of any type of hub-end gate-valve, making a cheaper as well as a more substantial installation than the regular type of either saddle or split tee. Taps of this nature are practical up to two-thirds of the diameter of the main. The tap pictured here is a 12-inch tap on a 24-inch main, but a 16-inch or 18-inch tap would be warranted. The entire equipment necessary for work of this nature consists of a steel bar about 4 feet long, threaded on one end for about 6 inches with 1/32-inch threads, a nut to fit the threaded end, and a flange for whatever size gate is to be used, tapped and fitted with a stuffing-box. As shown in illustration 1, the first procedure is to mark out the size required and cut about half through the side of the main with a diamond-point chisel. Next, the rod is electric-welded to the center of the portion already cut and then a nipple is electric-welded outside the cut portion. The gate is then installed, using either lead, Lead-Hydro-Tite, cement, or whatever the usual practice calls for, the flange bolted on with the thread end of the rod through the stuffing-box, and the nut screwed on. A few turns on the nut are sufficient to crack out the piece, which the main pressure will shove through the gate against the flange, permitting the gate to be closed so that the flange, rod and cut-out portion may be removed.

Illustration No. 3 shows an ordinary 6-inch hub-end gate with a wrought iron nipple welded to a 20-inch sheet iron main. This is the usual practice of making connections on a dry line with acetylene welding.

Illustration No. 4 shows at the right a 2-inch sleeve fastened to a 20-inch steel pipe under pressure. This sleeve is connected to the main with solder and is ready to have the cock inserted and for tapping. To the left is a 6-inch gate with a wrought iron nipple electric-welded to the main under pressure. Special note should be made of the method of tapping the face of the hub-end gate for the stud bolts, permitting the use of flanges similar to the one shown in Illustration 2.

Illustrations 5 and 6 show various types of domestic services, copper, galvanized, steel, cast iron and lead, with both lead and copper connections at the mains.

Illustrations 7 and 8 show insulated 30-inch rings on 30-inch riveted sheet iron mains using cement joints.

Illustration 9 shows a cut-out section of a cement joint on a 6-inch cast iron main.

The Exhibits

The exhibits staged by Mr. Farrell, as well as the actual demonstrations given, were as follows:

(a) Exhibit of a completed 6-inch electrically welded tap on a 20-inch sheet steel welded pipe line made under pressure.

(b) Exhibit of a completed 6-inch acetylene gas-welded tap made on a dry 20-inch sheet steel line to illustrate the welding of fittings to mains.

(c) Exhibit of a completed ½-inch solder tap made on a 20-inch sheet steel line while under pressure.

(d) Exhibit of an electrolysis drain bond tap on a 20-inch sheet steel line of a type used in the vicinity of power-houses.

(e) Exhibit of an electrolysis drain bond tap on an 8-inch cast iron main of a type used in the vicinity of power-houses.

(f) Exhibit of a cut-away section of a 6-inch cast iron joint made with standard yarn and calked lead.

(g) Exhibit of a cut-away section of a 6-inch standard cast iron pipe joint made of yarn and calked cement.

(h) Exhibit of a cut-away section of a 6-inch standard cast iron joint made with insulating maple-wood rings and calked cement.

(i) Exhibit of a cut-away section of a completed 30-inch calked cement sleeve joint on a sheet steel main.

(j) Exhibit of a cut-away section of a 4-inch fiber insulated flanged joint for standard screw pipe.

(k) Exhibit of a cut-away section of a fiber insulated ⅝-inch meter coupling.

(l) Exhibit of a cut-away section of a fiber insulated ¾-inch curb cock.

(m) Exhibit of 8-inch cast iron pipe with complete service installations, including a ¾-inch standard screw pipe insulated service, a ¾-inch brass service, not insulated; a 1-inch standard screw pipe insulated service; a 1¼-inch cast iron service, not insulated; a 1¼-inch standard screw insulated service; a 2-inch cast iron service, not insulated; a 2-inch cast iron insulated service.

(n) Exhibit of an actual section of a plate cut from a main in making a 12-inch electrically welded tap on a 24-inch main while in service under pressure on the East Bay Water Co.'s system.

(o) Exhibit of a completed section of a 4-inch cast iron pipe with four cement joints and an actual test demonstration made with the ends of the pipe clamped, pressure pumped in the pipe by means of a hand pump to 500 pounds without blowing the cement joint or even causing a sweat leak; with the end clamps removed, the pipe was again subjected to 500 pounds pressure and withstood in tension the pull on the cement joint without failure.

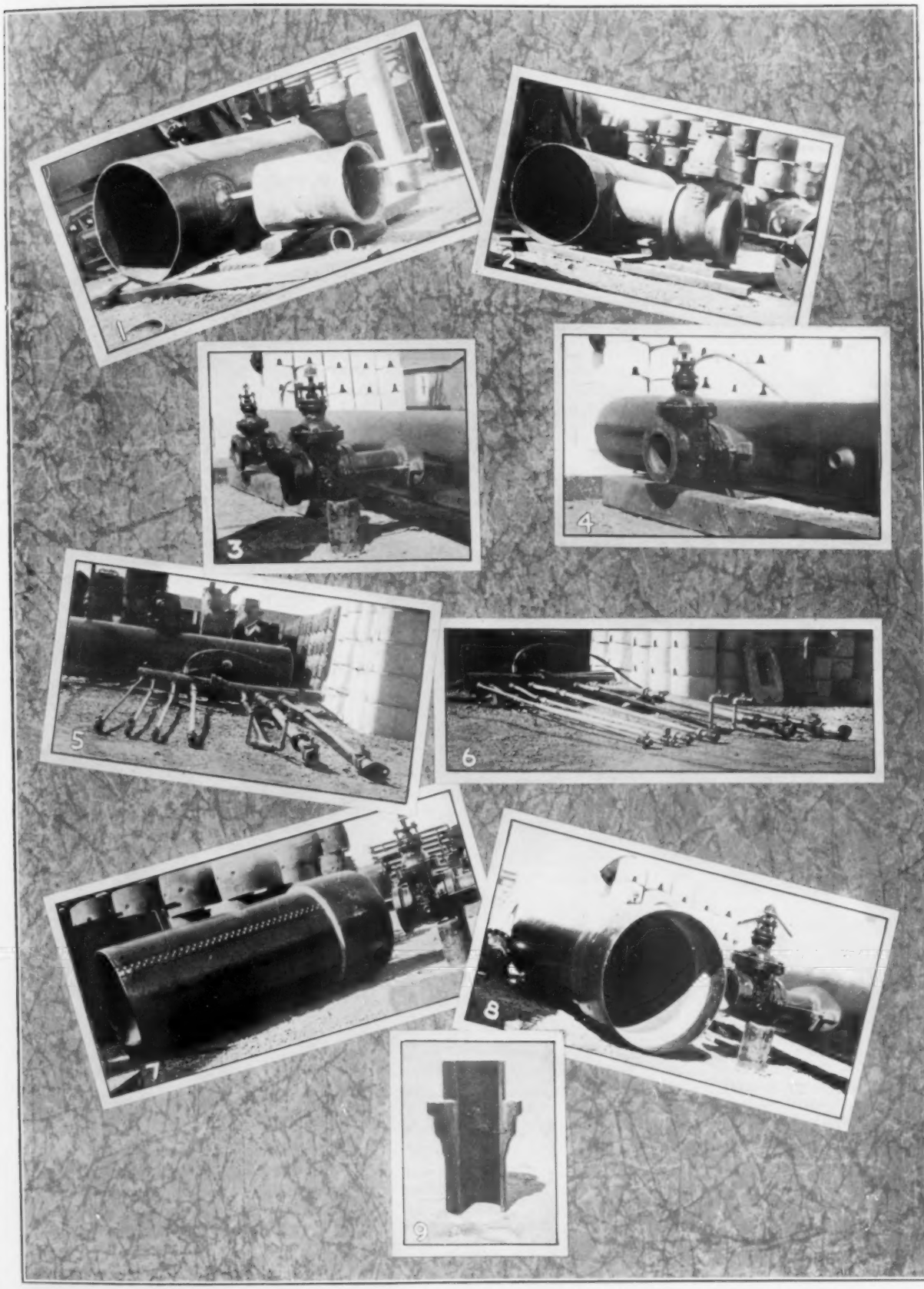
(p) An actual demonstration with a standard tapping machine making a 6-inch electrically welded tap on a 20-inch sheet steel main while under pressure.

(q) An actual demonstration of a 2-inch solder tap made on a 20-inch sheet steel main while under pressure. A sledge-hammer test made on this 2-inch solder tap failed to damage the joint.

(r) A demonstration of cement calking a sheet steel sleeve on a 30-inch sheet steel main.

(s) A demonstration of the method employed in making a 12-inch electrically welded tap on a 30-inch sheet steel main while under pressure without the use of any special tapping equipment except a diamond-point chisel, a special head to clamp on a 12-inch cast iron gage and a pull rod operated through a stuffing on this head.

(t) A demonstration of cement calking of an 8-inch cast iron joint using an insulated maple-wood ring.



EXHIBITS AT SAN JOSE MEETING OF THE CALIFORNIA SECTION OF THE AMERICAN WATER WORKS ASSOCIATION, DESCRIBED ON THE OPPOSITE PAGE

"Cooperation, Coordination, and Correlation" Raise Standards of Public Health in Decatur

THE many advantages accruing from the coordination of all public health activities under one director, were discussed at length in a recent issue of the *Illinois Health News* (Springfield) by Dr. William S. Kiester, until recently Director of Health of Decatur—a city in which the health officer is public school physician and director of the County Tuberculosis and Visiting Nurses Association, in addition to having other administrative activities. Discussing the general significance of centralized responsibility, he says:

"It means greater economy, less overlapping of work, and greater efficiency. The work becomes better systematized and each organization understands better what the others are doing. Shortly before the reorganization of the work in Decatur (in June, 1924), an appraisal of all health activities was made by a representative of the Child Health Association and Decatur was given a score of 380 points, placing her 74th among the 86 cities of the United States ranging in population from 40,000 to 70,000. In the spring of 1926, a similar appraisal was made by a representative of the U. S. Public Health Service, and Decatur was given a score of 685 points, an increase of 315 points, or nearly 83 per cent. If Decatur had had the latter score on the first survey, she would have ranked fourth instead of 74th among the 86 cities. Decatur stood third among the 15 largest cities in Illinois (Chicago excepted) which were studied and appraised under Dr. Parran's supervision in 1926, although she ranked only eighth in the amount of money appropriated for public health work. What brought about this change? The answer is plain—cooperation, coordination, and correlation of all public health activities, together with a more systematic and easily available system of records."

Dr. Keister, in stressing the point that all public health activities should center in the local health department, and that the advice and assistance of the director of health should be sought before any agency or individual undertakes to do any public health work in the community, adds:

"Careful observance of this rule will avoid much expense, duplication of effort, etc. Public health is a business and should be conducted in a businesslike manner with the expectation of giving a dollar's worth (and often more) for every dollar expended. No class of work yields greater dividends, when it is efficiently done. I have no patience for the organization or individual who extravagantly wastes public funds under the guise of doing a public service, not even to protect the people's health. Some national organizations (as well as others) are not altogether free from censure on this score."

The Health Officer cites a smallpox outbreak in Decatur as an illustration of the efficiency of coordinated health activities in a crisis. A high school boy, after having been ill for a week with symptoms of influenza (although he went about the community meantime, and attended the movies) finally returning to school and circulating freely among the students, proved to have a well-developed smallpox case. The Health Officer had the family and contacts, who lived in crowded apartments over a grocery store, quarantined. He reported to the School Superintendent and gained permission from the Board of Education to close the school to all students and teachers except those who had been successfully vaccinated within five years, those who had had smallpox, and those who went immediately to be vaccinated. Free vaccination was arranged for where advisable by school nurses, several physicians, including the Health Officer, doing the work, with the State Department of Public Health and the Parent-Teacher Federation providing the vaccine.

"Meantime the communicable disease nurse, working with the Assistant Health Officer, arranged with the overseer of the poor to provide food, etc., to the persons quarantined, and arranged for all close contacts to be vaccinated. Although the Citizens Protective League held an indignation meeting, vaccination in the schools continued."

Dr. Keister believes that the director of health and his assistants must be able and efficient, truly in love with their work, untiring in their efforts, enthusiastic, and with strong personalities, plenty of tact and good judgment, and determined to enforce law in a kindly manner. He believes, further, that coordination leads to more coordination and that where adequate funds are available, city and county health work and interests should be consolidated. "The county," he concludes, "is the logical unit in public health work in the United States, and it is to be hoped that the day is not far distant when an act will be passed which will enable the counties of Illinois to secure adequate public health departments."

Reducing Traffic Accidents by Curing Sick Intersections

By HAWLEY S. SIMPSON

TRAFFIC ENGINEER, ESSEX COUNTY, N. J.

AN accident may be defined as the occurrence of an *unexpected* event which results in injury, death or loss of property. The occurrence of the "unexpected" upon the highways of the United States in the last five years has resulted in the death of a population as great as that of Albany, N. Y., and injury to a group of persons approximating the entire population of Chicago.

The rate of fatalities per 100,000 persons has increased from about 6 in 1915 to 18 in 1926. The rate of fatalities per 10,000 motor vehicles has decreased from 24 to 9 in the same period of time. More accurately, the fatality rate per 100,000 population has increased approximately as the square root of the motor vehicle density; density being measured in motor vehicles per person.*

A great deal of effort and money is being expended in attempts to bring some measure of relief. These efforts are concentrated mainly on the prevention of accidents by such means as elimination of unfit operators, improvement in roadway conditions, improvement in street lighting, elimination of grade crossings, safety educational work in the schools, and safety campaigns. Prevention of disease follows similar lines, by eliminating disease-producing bacilli from food, water and air before being taken into the body. But when a person has contracted a disease, a physician is consulted and a cure attempted. In the traffic-accident problem, prevention has been perhaps overstressed at the expense of curative measures.

Points of extra hazard, being locations or areas which by reason of peculiar conditions produce an accident record above the average, might be termed "sick" locations. To effect a cure requires as skilled a diagnostician as does a sick person. It is these locations at which the "unexpected" occurs with greater frequency than might reasonably be expected. Elimination of the likeli-

*AUTHOR'S NOTE.—This computation is based on the statistics of deaths as classified by the Bureau of the Census, which designates as automobile fatalities only those in which the automobile is the heavier vehicle involved. For 1926 the Census Bureau's estimate, as quoted in the "1927 Facts and Figures" of the National Automobile Chamber of Commerce, is 20,819.

EDITOR'S NOTE.—For the Census Bureau's estimates of *all* motor vehicle fatalities (23,264 for the year 1926) see page 19 of this issue.

hood of occurrence of the "unexpected" should be effective in such cases, when the diagnosis is based upon accurate accident data and not upon prejudiced guesswork.

Extra-hazard locations do not comprise a large percentage of the total intersections of a community, but do produce the majority of accidents. One city of over half a million population found that 28 per cent of all street accidents occurred at but 64 intersections. In a smaller city, 33 per cent of all accidents occurred at 56 intersections. In a survey just concluded, 59 per cent of all accidents occurred at 22 per cent of the intersections. Another survey, covering a built-up area of 3.2 square miles, disclosed that over 12 per cent of the accidents occurred at only one intersection. The 20 heaviest accident intersections in Detroit were the scene of 4 per cent of the year's accidents, with an accident hazard 20 times the average.

Such conditions are not evidence that preventive measures have failed, but certainly that preventive work alone is not sufficient, and that curative measures, based upon accurate analysis of facts, must be undertaken if concrete results are to be obtained. If, as statistics indicate, 60 per cent of all street accidents occur at but 25 per cent of the intersections, the most immediate results will be obtained by remedial measures instituted at these points.

Accident statistics have been kept by states and cities for many years, from which have been compiled volumes of statistics, all of which are most valuable. Unfortunately, however, these statistics have as yet been used almost solely as the basis for round-table discussions and to assist in preparing safety propaganda. It is now time to actually use these facts in preventing recurrences of particular types of accidents known to be of extra frequency at particular locations. The state of Connecticut has recently embarked upon such a curative campaign and, considering the potential benefits to be derived, municipalities in other states with a sufficient background of statistics could well afford to use their information in a similar manner.

The Local Jail, with All Its Iniquitous Horrors, Must Go

"THE blackest blotch on American government is our local jail system. In these places—often unspeakably filthy—thousands of men and women, white and colored, native and alien, are herded together for months in close confinement in absolute idleness. Physical, mental, and moral degeneracy is the principal product of those incubators of crime. The local jail with all its middle-age horrors must go.

"One way to solve this jail problem is for the states to pass legislation taking away from the cities and counties and other units of local government the right to punish violation of local ordinances by confinement, and making all misdemeanors punishable by imprisonment offenses against the state. In place of the local jails, the state should provide farms for misdemeanants where suitable shops also could be operated under the states' use system. Detention stations only should be maintained by the localities for persons awaiting trial. The period of detention in these places should be strictly limited to a day or two. For longer periods of detention, transfer should be made to the nearest state misdemeanor farm or institution.

"In some states, local jails are still maintained under the iniquitous fee system. Abolition of the jail and the jail fee system would aid in the abatement and control of crime.

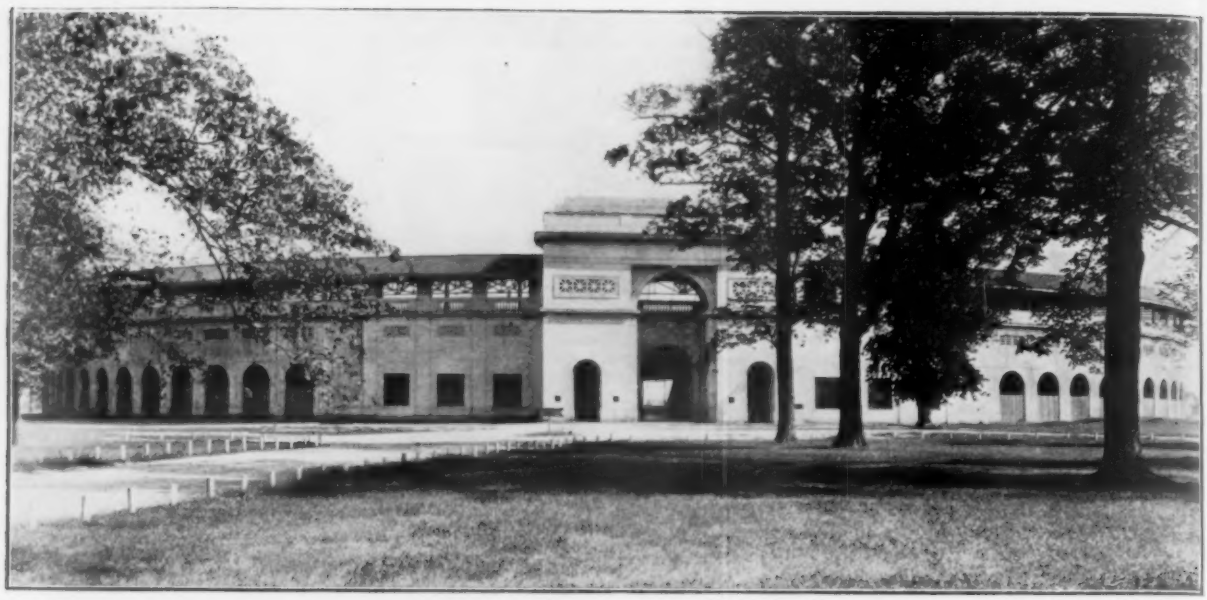
"Unless the prisoner, whether misdemeanant or convict, can be sent back to society from the prison with a sense of discipline, with an aptitude for work, with the vocational incentive, in good health, and with respect for the rights of others, the prisons are breeding rather than curing crime. Work is the solution of the prison problem, and the states' use system is the fairest method of providing that work."

These quotations are not from the ravings of an alarmist, but from a carefully considered statement by Major LeRoy Hodges, Managing Director of the Virginia State Chamber of Commerce, and for six years President of the State Prison Board of Virginia. The statement was presented by Major Hodges, speaking as a representative of the National Committee on Prisons and Prison Labor, before the National Conference on the Reduction of Crime, in Washington last month. Invitations to be officially represented at this conference, called by the National Crime Commission, were accepted by the American Bar Association, the Commissioners on Uniform Laws, the American Law Institute, the National Association of Attorneys General, and forty other leading national organizations as well as by prison or police officials from some thirty states.

Major Hodges believes that convict labor, stripped of local political considerations and of class and trade selfishness, and viewed in its relation to national industry, can hardly be considered a serious menace to "legitimate" business. He quotes comparative figures to support his conviction as to the general situation, and, going further, analyzes the more intense antagonism to prison labor which comes from the small group of trades that feel most definitely menaced. All of these can be worked out—are being worked out to the best interest of the state, the prisoner, private capital and "free" labor; and of the three methods now in vogue—the "contract system," the "public account system," and the "states' use system"—the latter is most widespread and satisfactory. The plan in its essence involves the use of convict-made goods by tax-supported institutions and agencies inside or outside the particular state where they are made. Its ultimate working-out will involve a huge distribution system or clearing-house. A national conference held in 1924 formulated a set of basic principles to govern such industry. Resolutions passed included one for bringing representatives of organized labor and the industries onto advisory committees and supervisory committees as a measure of offsetting suspicion of unfair competition. Major Hodges has gained an impressive familiarity with this whole subject as chairman of a sub-committee on Allocation of Prison Industries. He believes hopefully that vocational classification and training for prisoners will come, and that provision for competent industrial managers will also be made.

Paying Double for Electricity

THE organ of the League of Kansas Municipalities reports a high-pressure promotion campaign in that state to link every available electric distribution system to the transmission lines of the large operators, the methods employed being varied according to circumstances and opportunities. These transmission lines are practically non-competitive in most cases; and the "cities of the third class," many having only a few hundred inhabitants and thus being especially susceptible to the arguments favoring transmission-line service, usually have no other company to negotiate with than the one advancing the arguments. In some cases, such towns have, in consideration of 24-hour service and a "white way" or other improvement in street lighting, turned their municipal plants over to the power companies with practically no other compensation, title sometimes not passing for many years, however, so that taxes would not be levied against the property. Towns particularly isolated from inter-company competition and unwilling to provide electric service for themselves have been known to build new distribution systems and even stub transmission lines, under company direction, and deed them to the company for nominal amounts of money; while other towns, situated on the borderline between areas served by two companies, have obtained service without any such bonus being given. The rates charged being irrespective of the concessions given the company, the result is that the communities that gave their property as an inducement to get power-company service are paying for it in rates as well as in construction cost, or else are subsidizing service in places where competition exists.



ENTRANCE TO THE TERRE HAUTE STADIUM

Municipal Stadium a Recreation Center

By R. I. PIERCE

GENERAL SECRETARY, TERRE HAUTE CHAMBER OF COMMERCE

TERRE HAUTE'S $400,000 stadium has, in a manner, become the recreation center of the Wabash Valley. The stadium was begun in the early part of 1924, and was first used in the fall of that year. It was not until the spring of 1925 that it was completed and fully adapted for its purposes.

Twenty thousand people can be accommodated in the stadium. Sixteen thousand can be seated in the regular seats provided. The field is intended for baseball, football, field meets, pageants, exhibitions and similar public affairs.

The vast seating capacity is roofed over for about one-third. The stadium is of concrete construction, with the exception of the memorial arch entrance, which has been pronounced a fine type of Grecian architecture, and which sets off the stadium in imposing fashion.

Underneath the structure are club rooms for the baseball teams and others using the stadium. These are equipped with showers and other conveniences which make the place popular with those participating in athletics.

The stadium stands on the old Terre Haute fair grounds. The center of the horseshoe crosses the famous old race track on which many records were made. The west rim of the horseshoe follows along the line about where the old amphitheater stood. The area east of the stadium in time is to be landscaped, as is the park in front of the stadium, and the ultimate result is expected to be a spectacle which will be a testimonial to the enterprise of the city.

In the memorial arch are bronze tablets containing the names of the nearly seven thousand men and women whose services Terre Haute contributed to the World War.

The expenditure involved will afford facilities for a great variety of recreational and cultural activities. The whole history of the stadium in American cities is one of great variety of usefulness, and the Terre Haute construction follows the best precedent in the matter of design for the most widely varied uses. It follows the Greek "U" or horseshoe form, which, among other advantages, affords a natural straightaway for track athletics, while the more common Roman ellipse design must have tunneled tracks. In the matter of costs, stadiums range all the way from $11,000 to $3,000,000, but the Terre Haute enterprise compares in a highly favorable manner as to costs with other cities in its population range.

Ballot Bait

By ARTHUR A. TOPPING

If the situation's bad
In your home town, don't look sad!
Vote!

If your mayor seems a "crook"
And you wish he'd "get the hook,"
Vote!

If your council members talk,
But when time for action, balk,
Vote!

If your roads all need repair,
And there's no one seems to care,
Vote!

If your power-rate's too high,
And your taxes make you sigh,
Vote!

If you favor the bond issue,
Put your X upon the tissue,
Vote!

If the liquor bout you'd enter,
Or you'd like a civic center,
Vote!

If you've got an "axe to grind,"
Let your ballot speak your mind,
Vote!

If you want made clear your choice,
Use your written speaking voice,
Vote!

If we're thinking men and women,
Politicians need a trimmin',
Vote!

If you're more or less a "fan"
For the council-manager plan,
Vote!

If we're all born "free and equal,"
Let's have "government by the people,"
Vote!

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Errors to Avoid in City Planning

By JACOB L. CRANE, JR.
CITY PLAN ENGINEER, CHICAGO

THE science of city planning in America has developed greatly during the last fifteen years. There has been a steady advance in the technical phases of making civic surveys and preparing city plans and zoning ordinances. Equally important, we have learned a good deal about their limitations, and American cities particularly have now had enough experience with city planning and zoning in actual practice to be able to avoid the more common errors that have handicapped the work during its period of development.

It is important that we have learned not to expect too much from the application of city planning. There are many features of control in guiding the growth of a city which it is not feasible to put into effect through a city planning program, particularly because of the limitations of legal validity surrounding this form of municipal planning. The various court decisions on zoning cases have now clearly defined the range within which the police power of a municipality may be applied without falling into the danger of being found unreasonable by a court.

Errors of Too Arbitrary Regulation

For example, it is not reasonable to prohibit from a town uses which may be objectionable to some degree but which may be considered essential to the economical operation of a modern community, particularly as the prohibition of such uses tends to "dump" them into adjoining municipalities or unincorporated areas entitled to the same degree of protection as the municipality in question. We know that it is not sound to impose area regulations under a zoning ordinance which will make it impossible for citizens to use to reasonable advantage lots which they have purchased in good faith from plats approved by the miunicipal government. We know that street plans, for instance, and subdivision platting regulations cannot be too arbitrary or too rigidly enforced without working unreasonable hardship in some cases.

All the plans and ordinances adopted and enforced under a city planning and zoning program must be in keeping with the character of the town, must be moderate and reasonable, and must be subject to some variation in their application to meet unforeseen or changing circumstances. The more enthusiastic advocates have sometimes over-sold city planning; while its advantages have become so apparent that nearly every self-respecting city is utilizing its city planning and zoning powers, we know that it is not a panacea for all municipal ills, and that in order to take full advantage of its all-important benefits we must at the same time recognize its limitations.

In the actual preparation of plans and ordinances these cities have fallen into many errors, some of which are of only small importance, while others may be disastrous to the project. It is recognized that it is virtually impossible to foresee every danger of a mistake, but many of the more common pitfalls are clearly recognized.

Mistakes in the Organization of Planning and Zoning Commissions

First of all, some municipalities have made mistakes in the organization of their planning and zoning commissions. In the matter of personnel it should be realized that the work which these commissions have to do will vitally affect every piece of property and the entire future of the community as a whole, and that, correspondingly, the membership of the commission should be made up of individuals of the highest caliber, who will command the respect of the citizens. It is desirable to include in the commission certain of the city officials who are most familiar with municipal development problems, such as the city engineer, park officials, and representatives from the city council. Many of the state laws make specific provision for the inclusion of such officials, but, whether or not this is the case, consideration should be given to this factor in organizing the commissoin.

It is sometimes a serious disadvantage to have commissions of too many members. The speaker, a few years ago, worked with a zoning commission of twenty-seven men and women, which proved to be quite unwieldy. A quorum was rarely present at the meetings and the sense of responsibility in the individual member was small. Ordinarily a commission of five, or, in smaller towns even three, and usually not to exceed seven or nine, has been found most successful. It is feasible to have unofficial advisory committees from various groups interested in special problems to work with the official commission, and, if it is desired to maintain as wide contacts as possible during the work, this plan is better than the creation of too large an official commission.

Handicaps of Inadequate Funds

One of the greatest handicaps imposed upon a city planning commission is lack of adequate funds. While it is possible to muddle along with small funds, and even in some cases to make some progress, it is usually more economical in the long run to adequately finance the commission's work from the start and in that way to get the fundamental surveys, plans, and ordinances prepared and adopted within a reasonable time. Furthermore, when one considers the great and vital importance of this project to the whole future of a city it is obviously not sensible to handicap the work by a pinch-penny policy. The entire cost of a city planning and zoning project is so small when considered on the per capita basis, or in the light of the effect which it will have upon every feature of city growth, and particularly when a city of limited financial means can reduce the cost by a carefully prepared program for the work, perhaps involving the use of regular city forces, that it seems only the simplest common sense to provide the commission with at least a fairly adequate budget for its work.

Errors of Planning Without Civic Surveys

Many mistakes have been made in attempting to prepare plans or zoning ordinances without adequate civic surveys to establish the facts on which they should be based. A number of times the speaker has been called in to review zoning plans which had been prepared by zoning commissions without the benefit of even a brief civic survey. In one case, after the necessary surveys had been made, we found that the commission's first draft of a zoning plan extended the main business district more than half a mile in the wrong direction and failed to extend it in the direction where the surveys plainly indicated that it would be needed. The re-shaping of the plan caused some bitterness on the part of those whose ideas of business property had been prematurely formed.

In the preparation of civic surveys there is a danger of making them too mechanical by applying a fixed schedule of investigations to different towns of varying character. The outline of a civic survey should properly be made for every town individually in just the way that the plans and ordinances should be drawn to meet the individual cities' peculiar characteristics. On the other hand, it is not always possible to foresee whether the information gathered by a particular item of the survey will be vitally needed or not, and for this reason it is usually wise to go through with a reasonably complete schedule. Some-

times most unforeseen facts will be developed to exert a controlling influence on the plans. Particularly, the more fundamental questions as to a town's individual destiny or purposes should be carefully analyzed.

Unwisdom of Copying Other Ordinances

Some of the smaller cities have made the mistake of copying, almost verbatim, the ordinances of other apparently similar towns. This is quite likely to be disastrous. While two small cities may at first glance appear to have much the same problems, the details of a zoning ordinance, for example, if properly drawn, will invariably differ for each community. Such matters as the area regulations, building-line setbacks, and the classification of use districts will be different for each town, almost without exception.

The Two-horned Dilemma—Shortsighted or Visionary Planning

The commonest error, and one which is probably unavoidable, is making plans which are too shortsighted. So long as American towns continue to grow as rapidly as they have during the last fifty years, the citizens will be full of vague enthusiasm about their future, but when plans are proposed to meet the apparent requirements of this glorious future, there are nearly always vociferous people who succeed more or less in talking them down. Furthermore, the introduction of new features in our civilization, such as the automobile has been, will very likely create new and as yet unforeseen demands which will cause future generations to find the plans which we are making now too shortsighted.

There is an easy error commonly made on the opposite side of this dilemma, namely, that of making some of the plans too big. While the city planner and the plan commission may realize the eventual necessity of large-scale proposals, it is sometimes unwise to place too great an emphasis upon them so long as their accomplishment seems utterly impossible. City plans should in general be kept within the range of the reasonable financial capacity of a community. This is particularly important in getting and holding the essential public support.

Failing to Put the Plans Into Effect

Probably, the error which has done the most damage to city planning in America, and which has been all too common up until the last few years, is that of preparing elaborate development plans and then failing to put these plans into effect. My guess would be that not less than half of all the competent city plans prepared in this country have been of small effect because after they were prepared they were merely pigeonholed and not given any official standing for carrying out the plans or enforcing the proposed regulations. It is true that in a great many cases these lost city plans have had a material effect upon the development of the city, since the proposals made in them will reappear from time to time and be utilized without the people or city officials realizing just where the ideas came from.

Solving the Problem of Publicity and Promotion

On the other hand, it may be said that the specific adoption of ordinances and regulations and plans, and the never-ending promotion and vigilance which the plan commission can give, is at least as important as, and probably more important, than the preparation of the plans themselves. During the last decade there has been great progress in this field of city planning. Procedure for putting zoning into effect, for establishing and developing a major street system by subdivision platting control and by supplemental building-line regulations, the official or semi-official adoption of park development plans by the park authorities and of school-site programs by the school authorities, and a consistent advocacy of definite improvement projects have, in the cities which realize the importance of their city plans and of the necessity of making them effective, justified the entire project many times over.

It is valuable to create public interest by the publication and distribution of printed material such as an illustrated city planning report, but it is equally important to have the officials of a city, such as the city engineer, the park engineers, etc., completely familiar with, and in sympathy with, the plan proposals.

The Commission Should Be Permanent

Involved in the same matter of utilizing city plans and making them effective is the question of the permanence of the city plan commission and its technical staff or consultation service. No city plan should be considered to be finished. As new factors appear and new conditions arise, it is vital to be able to modify and re-adapt the plans accordingly. Furthermore, there are always a great many questions about the interpretation or application of the plans and regulations, and these matters can be properly taken care of only by the commission and engineer who first prepared them. While the membership of the commission may change from year to year by the expiration of terms and the appointment of new members, the commission as such should properly function permanently.

The civic surveys, or at least part of them, should be kept up to date, and the commission's work in promoting the plans and in acting in an advisory capacity to the city council on the interpretation and modification of the plans is a most essential part of its work. Likewise, the engineer engaged by the commission should in many cases be retained, if only at a nominal fee, to be available for advice and suggestions at least during the first few years after the plans have been prepared. All of this is a matter of simple common-sense economy. If the time and money involved in making the surveys and plans are to be justified, the application of these plans must be consistent. This requires at least as much energy and intelligence as the preliminary work.

In this brief paper it is possible to touch upon only a few of the more common possibilities of mistake, but these will serve to indicate the importance of thoughtful consideration of each step. The whole city planning and zoning project involves nothing more than the exercise of enlightened common sense. There is nothing mysterious about it, and the people who attempt to throw a veil of mystery around it are only hurting the cause. The whole thing is a matter of determining as soundly as possible what a city's fundamental future requirements are going to be, and of sensibly, but consistently, planning and enforcing the plans to meet these requirements.

From a paper presented at the convention of the American Society for Municipal Improvements, Dallas, Texas, November 14 to 18, 1927.

City Planning a Vital Necessity

IT is believed by many that millions of dollars in the cities of this continent have been wasted in widening and straightening highways, and in putting through new highways, through failure to regulate congestion at the centers. Experience proves that increased facilities for getting away from the center provide only temporary relief unless stringent building regulations are enforced. If allowed, any "slack" produced by street planning will be entirely taken up by increased congestion at the center, due to lack of city planning control.

If dispassionate consideration of its economic advantages will not bring about a popular demand for city planning, the continuance or intensification of present traffic conditions with its huge annual toll of wasted time and human life will compel the adoption of city planning as a matter of self-preservation. Why wait until thousands more of human lives are snuffed out and the costs of adequate city planning are trebled or quadrupled? As a great part of city planning costs practically nothing, why not start now on what can be done now? The investment of a dollar now may mean a return of hundreds within the lifetime of most now living.

—From *White Paper No.* 117, published Nov. 16, 1927, by the Toronto Bureau of Municipal Research.

Garbage Disposal at Highlands, N. J.

Data on Operation of New Incinerator

THE borough of Highlands, N. J., is a seashore resort having a population of about 2,000 people for nine months of the year and a summer population during the latter part of June and the months of July and August of somewhere between 9,000 and 10,000 people. In the summer the garbage is unusually wet because it is mostly collected from hotels, boarding houses and restaurants.

The business section of the borough produces very little rubbish, so that when the population is 2,000, there is rarely sufficient rubbish to properly incinerate the garbage collected. When the population increases in the summer months, the rubbish does not increase in proportion. It is estimated that the borough collection is 90 per cent garbage, having a moisture content of 80 to 85 per cent, and rubbish of approximately 10 per cent.

In the spring of 1927, a United States Standard incinerator was built for the borough and it was tested in June, 1927.

EXTERIOR OF THE HIGHLAND, N. J., INCINERATOR

This incinerator was guaranteed to burn one ton per hour of the general collection of garbage and rubbish having 65 per cent garbage, with a moisture content not exceeding 70 per cent, and 35 per cent rubbish, and to burn this material without fuel. The final test run was begun at ten o'clock on the morning of June 8, when the fire was started. Sixteen truckloads of garbage were consumed and the floor was washed up at 2:15 P. M. On this run the rate for consuming garbage was 3 tons per hour, or 72 tons in 24 hours. The entire test was made without any additional fuel, and 2000 degrees temperature was reached in the combustion chamber within 20 minutes after the fire was lighted. There was no odor around the plant, and the little light-blue smoke that came from the stack at intervals had no odor.

There are three charging openings in the incinerator. One is for the refuse containing a small amount of moisture, the second for wet garbage which is dried by the flames from the firing hearth and by forced draught through the patented drying grates. When this is dried out, it is moved by stoking-bars to the firing hearth, and becomes fuel to burn the incoming garbage. The gases from the furnace pass to the combustion chamber, where they are retarded by a series of walls permitting the burning of all gases at a temperature of 1500 to 2000 degrees F. From the combustion chamber the gases pass through the flue to the 75-foot stack. The combustion chamber has an opening large enough to receive the carcass of a horse without dismembering it. At the temperature in the chamber the gases will entirely consume a carcass in about 35 minutes.

Special high grade fire brick are used on the inside walls of the furnace. These walls have a thickness of 9 inches. Between the fire brick and the outside common brick furnace walls, is a 2½-inch layer of "Sil-o-Cel," which is one of the best non-conductors of heat on the market. The common brick furnace walls outside the "Sil-o-Cel" are 13 inches thick.

The result is a furnace of sturdy construction, and one which retains the heat within the furnace during operation and after shut-down, permits the furnace to cool off very gradually, thereby eliminating most of the difficulties from expansion and contraction.

Loads of material were weighed during June and found to have an average weight of 800 pounds per load, whereas the average weights of loads weighed on various days during August when unusually wet weather predominated, were found to be approximately 1,200 pounds, this increase being due entirely to the additional water. During July, no particular effort was made to keep a record of the loads, but it was soon found that it would be necessary to do so. On August 1 an actual record was started. From this record covering the period from August 1 to September 10, 36 collection days, it is found that 837 loads of material were collected, weighing 503 tons. The average collected during this period per day was 14 tons, the minimum being 9 tons, and the maximum collected on Labor Day was 22 tons. The maximum collection of 22 tons was entirely incinerated during 12 hours' operation of the plant, from 9 A. M. in the morning until 9 P. M. at night, or at 183 per cent of the rated capacity of the plant.

The total cost during this 36-day period of operation is as follows:

Cost of labor	$318.35
Wood	30.00
Coal	42.00
Electric power	14.00
	$404.35

This gives an average figure of 80.3 cents per ton, as the cost of disposal.

The collection figures during this period are:

Cost of labor	$891.00
Cost of gas and oil	86.40
	$977.40

This gives an average of $1.90 per ton for collection.

CHARGING PITS OVER INCINERATOR

In former years the borough found it necessary to maintain a dump for garbage within the borough limits. It was necessary to keep one man at this dump at all times at an expense of $4.50 per day, and to use an average of four bags of lime at a cost of $4.00 per day, and it was necessary to haul dirt in order to cover up each day's deposits. The total expense per day for such disposal averaged approximately $18.50, so that by comparison it was found that the borough had actually saved during this 36-day period for which records were kept, the sum of $272 by incineration.

As a comparison between the summer season and the off season, the figures of the week beginning September 12, the start of the off season, show that the loads again return to an average weight of 800 pounds and that 42½ tons were collected during the six days of the week, giving an average of 7 tons per day as compared to 14 tons per day during the busy season. This material was disposed

of at a total cost of $38, which figures 90 cents per ton.

The cost of the incinerator to the taxpayers is less than 50 cents per $1,000 of assessed value. A property assessed at $3,000 will pay an additional tax of less than $1.50 per year, which takes care of the interest on the incinerator cost of $24,000 at 5 per cent. The bonds will be paid off a small amount each year. This amount will be saved through the reduced time for hauling the garbage away—estimated at 30 minutes per load.

EDITORIAL NOTE.—The data herein as to the cost of operation, etc., was compiled and furnished by U. Grant Johnson, Borough Superintendent. The incinerator was designed under the direction of Edgar B. Kay, consulting engineer, Washington, D. C., and built by the Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa. The job was let March 9, 1927, work begun March 26, and the first load of garbage burned June 2, 1927.

Control of Street Pavement Openings

Methods of Control in Representative American Cities

WITH the question of pavement openings becoming of more importance with increased traffic and with the use of more permanent materials for paving, a great variety of methods is employed by the different cities throughout the country to reduce these cuttings to a minimum. Some cities have tried one method after another in their attempt to find a solution to the problem. Especially in rapidly growing cities, where earlier utility connections have been severely overtaxed, is the situation acute. A survey of twenty representative American cities should throw some light on the methods in current use and may afford suggestions for still greater control of this important situation.

Approximately one-third of the cities covered in this symposium have incorporated in their ordinances that public utility companies and property holders make connections and build substructure work before the paving or complete repaving of a street, with a time limit, usually from three to five years, before cuts can be made except for emergencies, such as leaks or conduit breaking. A penalty of $100 is charged to property owners in one city if they fail to comply with this notice for laying pipes, etc., before the street is paved, and apply at a later date for a cutting permit. A bond of $3,000 to $5,000 is required of plumbers making excavations, in another city, which protects the city in case of accident and guarantees satisfactory backfill. The Mayor's written approval is required for any opening within two years of the completion of a street pavement, in another city.

One city engineer suggests that the only way to eliminate pavement destruction is to place all substructures outside the width of the pavement, this being possible with traffic demanding wider pavements, where sufficient space can be left between the curb lines and the property lines for the entrenchment of necessary substructures. Even in one fast-growing southern resort city, permits are issued only when absolutely necessary. In many cases, the public utility company or party making the cut is required to replace the pavement over any settlement in the trench, or other failure, that can be traced to the party making the cut, and this has greatly eliminated the pavement openings. Another city has a special Substructure Committee, which meets once a month, and whose purpose it is to place as much of the underground work as possible in the streets prior to the paving. One service of this Committee is the providing of a reasonably enlarged house connection service that will anticipate the future use of the property.

The double deposit system of one city, in which a deposit is required for a second restoration, if necessary, in case of settlement within six months, has done a great deal towards securing better compacting of the backfill and better and more permanent jobs. High charges for cutting, and no refunds, are a means of reducing the cuttings in another case. By placing the backfills themselves and charging the party making the cut for them, several other cities feel they have reduced cuttings. By requiring public service corporations and city departments to install connections from their mains for all vacant property and property not having connections, previous to the construction of a substantial type of pavement, another city has reduced cuts to a minimum.

An unusual case is found in one city where the responsibility of the party making the cut absolutely ends with the backfill and the city carries all obligations for holes from settlement that might cause accidents. Another city is at present working out the details of a better system to supplant its antiquated ordinances.

Indianapolis, Ind.

The city of Indianapolis feels that it has the situation pretty well in hand, especially as regards the plumbers. Before any pavement may be cut, a permit is required. Individuals, such as plumbers, are required to deposit a bond of $3,000 to $5,000. This bond serves a twofold purpose. It is a protection to the city in case of accident while the street is open, and also a guarantee that the backfill will be replaced in a satisfactory manner. The smaller bond covers that class of plumbers that excavates for the purpose of laying water services, an average depth of 4 feet. The larger bond covers that class of plumbers that excavate for the purpose of laying sewer house connections, the depth of which is as much as 30 feet in some instances.

The public utilities are not required to furnish bond, as they are operating under an indeterminate permit granted by the Public Service Commission of Indiana. This gives the utilities the right to cut into pavements without cost for a permit, while the plumbers are charged a fee of $1.50 for each permit.

After each street cut has been made and properly backfilled, the city street repair department lays the concrete base and wearing surface. The repair is measured and the plumber is billed for the repairs at a stated price per square yard, depending on the type of wearing surface.

If the plumber allows his bill to go delinquent, he is refused any further permits, and if he allows the bill to lapse sixty days, the city starts legal action against his bondholders.

In the case of public utility corporations in making cuts, after the proper backfill has been made, the cuts are repaired. The utility company usually lays the concrete base, and the city lays the wearing surface, if of asphalt or asphaltic concrete, billing the company in the same manner as the plumber. In the extension of mains or the laying of new mains, the utility company, after backfilling, contracts with one of the local paving companies to make the necessary replacement and repairs to the pavement.

As to the backfill, the city requires hand tamping that is satisfactory to the inspection of the Engineer's office. Once in a great while this city has found it necessary to make some plumber dig out the dirt and put it back in order to get all the dirt back in the hole.

In order to eliminate cutting into pavements as much as possible, before the street pavement is laid, the city requires the extension of all water, gas, sewer and other private utility connections to the property line where they are not already in. This ordinance has been in effect for the past fourteen years. As a further safeguard, in case a property owner absolutely refuses to extend the utility connections when the street is paved, there is an ordinance prohibiting the cutting of pavements for three years after completion. This ordinance has been in force for four years.

Considering the fact that several of

the paved streets of this city have been laid for over thirty years, this city feels that it has the situation well in hand and that cutting into pavements has been reduced to a minimum.

—This statement is based on information furnished by Sherman A. Henricks, Assistant Engineer, Indianapolis, Ind.

San Antonio, Texas

Before a street is paved in San Antonio, it is the practice of the City Engineer to notify all public service companies of the contemplated improvement and request that they lay whatever mains are required and do whatever underground work is necessary. At the same time a notice is sent to all property owners on the street, requesting that they arrange for service connections, both on improved and on unimproved property, and allowing fifteen days in which to make these connections.

However, should a property owner fail to comply with this notice and apply at a later date for a permit to cut the paving to make a connection, he is required not only to deposit a sufficient amount to cover the cost of its replacement, but to pay a penalty of $100. This penalty does not apply in case of emergency leaks in the gas or water mains, or other necessary reconstruction work. Occacionally this penalty is waived by the Mayor or the Street Commissioner, if a property owner is an innocent purchaser of a piece of property on which no service connections had been made. He is, however, required to place the necessary deposit for the replacement of paving.

In applying for a permit to cut a paved street, the minimum deposit is $25, varying in amount according to the size of the cut. This deposit is placed in a trust fund held by the City Engineer. The paving company having the maintenance of a street is notified to make the necessary repairs, and the bill for this work is sent the City Engineer. The work is then inspected and, if satisfactory, the bill is paid by the Engineer, and the balance returned to the depositor. If the maintenance on a street has expired, repairs are made by the city's asphalt gang and paid for in the manner above mentioned, the minimum charge for these repairs being $6.

The backfilling of the trench is done by flushing and tamping to within 18 inches of the bottom of the street base. Then 18 inches of lean concrete of a mix 1:4:8 is placed in the trench. After this, a concrete base of 6-inch 1:3:5 mix is placed in the trench, ready for the topping. All tunnels are backfilled with lean concrete.

—This statement is based on information supplied by I. Ewig, City Engineer, San Antonio, Texas.

Atlanta, Ga.

The city of Atlanta finds the method under which it is operating fairly satisfactory, after experimenting with others. Several years ago the city passed an ordinance forbidding the opening of streets paved with "permanent pavement" within five years after completion of the work. As this is a growing city, it was found impractical to enforce the ordinance owing to the method adopted at the time of notifying the property owners on the street to have their underground connections all made before the street was paved and quoting the ordinance forbidding the opening within five years for the making of these connections, but leaving it optional with the property owner as to whether it was done or not.

Later, the city undertook to make all sewer and water connections and assess this cost against the property before the street was paved, not leaving it optional with the property owner as to whether the connections were made. This was a great improvement, but it does not operate successfully in regard to gas connections, which are put down only upon written order of the property owner to the gas company and payment for the connections.

The city could not put these connections in by ordinance, as this public utility is not owned by the city. Therefore, the ordinance prohibiting opening streets within five years was amended, allowing these openings to be made after approval by the Street Committee of Council and the Chief of Construction, upon the payment of a penalty of $25, which does not include any of the costs incident to the work, but the penalty only. In all cases, the cost of the work and of the repavement of the cut is borne by the property owner. This is the present method of operation.

—This statement is based on information furnished by William A. Hansell, Chief of Construction, Atlanta, Ga.

High Fee and No Refund

In Detroit a high charge is made by the city as a preventive against pavement openings. The charge for cutting a first-year pavement is $75 with no refund, and the charge for cutting a second-year pavement is $50 without a refund. The money derived from the issuing of permits is credited to the Permit Fund, a revolving fund within the Department which is used for the repair of cuts and kindred work and the compensation for inspection and clerical personnel.

Syracuse, N. Y.

According to the City Engineer of Syracuse, the only way to eliminate the practice of pavement destruction by cutting to reach substructures is to place all structures outside the width of the pavement. With traffic demanding wider pavements, it is plausible and feasible to so widen streets that sufficient space will be left between the curb lines and the property lines for the entrenchment of necessary substructures. Sufficient space will accommodate water and gas mains, electric conduits, sewers and other underground structures which are now directly responsible for the practice that has ruined many formerly excellent pavements. Streets, even in new tracts or newly developed areas, should be not less than 60 feet in width, and in a majority of cases even wider.

When pavement cutting is necessary, when trouble develops beneath most of the pavements, it should be mandatory on the person or company or corporation responsible for the cutting to deposit with the City Treasurer a certified check or draft to cover amply the cost of repairs to the entire section destroyed.

Moreover, after the cut is made and the repairs to the substructure completed, no material should be placed in the trench for backfill unless an inspector under jurisdiction of the city shall be present and give his permission for such refilling. The salary of such an inspector should be made a charge against the person, company or corporation responsible for the cutting.

When the accepted material shall have been placed in the trench, it should be compacted up to the elevation of the concrete base adjoining the cut. On this should be laid a reinforced concrete slab built up to the underside of the proposed asphalt surface. The width of this slab should be at least one foot greater than the width of what was the trench, so that it will serve as a beam with bearing of not less than six inches on solid ground, adjoining the former trench.

In this way, the reinforcing bars of the concrete, extending over the original trench at least six inches on each side, form a bridge which will support the weight of the superstructure if the material of the refill sags.

—This statement is based on information furnished by Nelson F. Pitts, Jr., City Engineer, Syracuse, N. Y.

Boston, Mass.

In Boston, an effort is made to restrict street opening to other than the winter season, and in most of the new streets it is necessary for the applicant to have the Mayor's written approval for any opening within two years of the completion of the street.

Persons applying for permits to make openings in street pavements are required to file bonds in amounts varying according to the nature of their proposed operation. The bond is for the protection of the city against claims arising from the opening and occupation of the street under the permit, and to insure the carrying-out of the permit specifications.

Openings in guaranteed pavement, that is, pavement laid under contract with the city on which a five-year maintenance is included, are not permitted until the applicant has filed his order directing the guarantor to make permanent repair at the applicant's expense. Drainlayers and others desiring to make openings of minor character are required to make a deposit with the city to cover the cost of repair by city forces, in advance of receiving a permit.

Where openings are to be made in streets on which the guarantee has expired, the applicant is required to place a repair order with a qualified paver, selected by the city and operating under city inspection. An increasing number of paving repairs on various types of block and bituminous surfaces are being made as above, as the macadam-surfaced streets are being replaced with the more permanent materials.

Permits are issued from a duplicating machine in three sheets. The first sheet becomes the permanent office record of the opening. The second is an exact duplicate of the first and is given to the applicant, to be retained by him. The third is a police coupon. It is given to the applicant to turn over to the police officer on whose beat the opening is to be made. The officer has it booked at his station and returned to the issuing office.

The first and second sheets of the permit contain the conditions under which it is granted and provide: that the city is to be saved harmless from any damage it may sustain or be required to pay on account of the acts or neglect of the permittee or his employes; that certain care be exercised to protect city or privately owned structures in or under the street; that temporary or permanent repairs to the surface be made when and in such manner as directed; that suitable warning lights be used, refuse and surplus material removed, and that any subsequent repairs required within two years from the completion of the work shall be paid for by the applicant.

Extra depth and width of concrete base for block or bituminous surface is called for in order to distribute the traffic load over an area in excess of the actual cut. All joints are required to be broken out and nothing but entire block used in repairs. Where a properly compacted replacement of excavated material is secured, little future settlement occurs. Detailing of inspectors at the expense of the permittee is provided by law.

—This statement is based on information furnished by Joshua Atwood, Highway Division Engineer, Boston, Mass.

Portland, Ore.

The city of Portland, before new pavements are constructed by the city, mails notices to all the utility companies, instructing them to place underground structures in advance of the street paving, and notifying them that no cuts will be permitted for a period of two years after the completion of the pavement. In the downtown heavily traveled streets, careful inspection is given to the backfilling of trenches, and instructions are given for the use of quick-setting cement in order that there may be no serious delays to traffic. It is also required of the public utility companies to file in the office of the City Engineer plans of any proposed work, showing the locations of all underground structures. This information is platted upon the office records for future use.

The ordinance covering street-opening and pavement-cutting permits provides that it shall be unlawful for any person to dig up, break into, excavate, disturb, dig under, or undermine any street for any purpose without first obtaining from the City Engineer a written permit for such work, excepting only cases of emergency, for which applications shall be filed as soon as practicable after the emergency repairs have been completed.

$100 Deposit in St. Louis

As in most other cities, St. Louis endeavors to have all repairs made to underground piping and conduits previous to the reconstruction of street pavement, under penalty of not allowing cuts in a street for at least one year after a pavement has been laid. A deposit of $100 is required for each 75 feet of trench to be opened. If the city repairs the pavement, the charge is made against this deposit and no further permits are allowed until the fund is brought up to the original amount.

A bond is required guaranteeing that the applicant for a permit will immediately remove all surplus material, and replace in a condition satisfactory to the City Engineer the portion of the street disturbed, and that he will keep such portion of said street in good repair at his own expense for the period of one year from the date of the completion of the work. The amount of this bond is fixed at not less than $50, and at the rate of $100 for each 200 feet dug up or disturbed. The applicant may at his option file yearly a bond in the sum of $1,000 instead of a separate bond for each job. It has been the practice in this city for plumbers to file this $1,000 bond, which covers their work for one year.

—This statement is based on information furnished by O. Laurgaard, City Engineer, Department of Public Works, Portland, Ore.

Miami, Fla.

Even though the city of Miami has grown far beyond any early expectations, only when absolutely necessary are permits issued for the cutting of pavement. This particularly applies where large buildings are being erected replacing, possibly, a residence, where the larger building requires larger service in the way of sewer, water and gas connections. Then, too, in the downtown area, the city has permitted, and is permitting, the installation of underground conduits and services for telephone, telegraph and electric lines for light and power. In a number of instances it has been necessary to cut pavement for the installation of high-pressure mains, as the downtown area of this city was not laid out and originally installed with the expectation that the area would be anywhere nearly as thickly populated as it is becoming. In consequence, none of the utilities were underground, and the underground structures that were in place have proved inadequate for the needs and are being replaced by underground work that will take care of future growth.

—This statement is based on information furnished by Ernest Cotton, Director of Public Service, Miami, Fla.

Columbus, Ohio

It has been the practice of the City of Columbus, for many years, in all new paving or repaving of streets, to construct in advance all underground structures, so that there is no need for opening streets on new pavements except in case of emergency, such as stoppage in a sewer or conduit or leak in a gas main that cannot be remedied in any other way. There is a city ordinance in effect which prohibits the opening of a pavement during the first five years of its life, for any purpose except an emergency, as may be determined by the City Engineer. The cutting of pavements for the replacing or repairing of subsurface structures, as well as the replacement of the pavement, is under the general supervision of the engineering department.

For the construction and repair of sewer connections, the work is done by city forces exclusively, the cost being paid by the owner of the property served. In most cases, the excavated material is replaced in thin layers and compacted by tamping. If the material is not suitable for backfilling, gravel is used for that purpose. In some cases, where the sewer is laid in a tunnel, the space above the pipe is filled with a weak concrete. All water-works cuts are made by city forces. The Water Works Department, which is a city-owned plant, makes the cut and backfill, and the engineering department replaces the pavement.

The public service companies are required in their several franchises to take out permits for opening any street or alley. A record of these permits is kept on file so that any settlement in the trench, or other failure, can be traced to the proper public utility, which

is required to replace the pavement over any such settlement or repair any defect. This arrangement has had the effect of eliminating, to a large extent, settlements over such pavement openings, as these companies have taken pains in the replacing of the material excavated from the trenches in order to avoid the extra expense that would be caused by repairing over a settlement. On asphalt streets, the utilities arrange with the city to replace the pavement, which is usually done in connection with the asphalt repair work, the various utilities, of course, paying the city for this work. Most of the utilities arrange with the city also to handle the repaving of stone, brick and other types of pavement.

In all important streets, the openings, after being backfilled, are surfaced with a cold patch material until such time as the permanent pavement is relaid, and an emergency repair crew is required to see that the pavement surface remains even with the general street level at all times until the permanent repair is made.

—This statement is based on information furnished by R. H. Simpson, Chief Engineer, Department of Public Service, Columbus, Ohio.

Los Angeles, Calif.

Looking to the end of preventing excavations in comparatively newly constructed pavements, the Substructure Committee of the city of Los Angeles was formed on March 1, 1926. The particular activity of this Committee is the coordination of underground work of all classes, including water lines, gas lines, light and power conduits, etc., particularly with a view to placing these underground works in the streets prior to the paving thereof. All public utility companies operating in the city of Los Angeles are members of this committee, and representatives attend the meetings, which are held once a month.

As far as main-line construction is concerned, through ample notification to the various utilities, sufficient main lines have been placed in all streets prior to the paving in order to insure that no cuts will be made in the pavement to renew or enlarge this class of work. The question of house connection laterals is a very aggravated and troublesome one, particularly in a community which is rapidly developing, and a great many changes in the use of property are being made. As a general proposition, it is found that utilities have anticipated even a large percentage of changes in the use of the property, and the mains, almost without exception, are sufficient to take care of the demand. This, however, is impossible as far as the house connections are concerned. The principal work of the Committee, therefore, at this time, is the discussion centering around the proposition of providing a reasonably enlarged house-connection service that will anticipate the future use of the property, particularly along such boulevards and streets as are only partially developed.

The Water Department, which is a municipally owned and operated utility in this city, has inaugurated the policy of placing 2-inch cast iron house connection laterals on the division line between lots, thus serving two lots from one house connection for all ordinary services, i.e., from ½ to 1 inch in size. In nearly all improved streets it is now provided that, in connection with the pavement proceedings, these laterals are placed in front of vacant property and assessed against the property the same as other improvements, as a necessary appurtenance to the paving of the roadway. In this city, also, arrangements are made in the same proceeding for the construction of the necessary mains and house connections in the sanitary sewer system.

The problem before this Committee, therefore, has reduced itself to the proposition of providing house-connection services for gas in front of vacant property, and it is hoped to enact the necessary legislation whereby, through a municipal procedure ordinance, the city will advance the necessary funds to construct the laterals, the city to be reimbursed by the private corporation as soon as the service becomes active, that is, as soon as property is improved.

In the installation of mains, conduits and services in the downtown congested section, the open cuts in the pavement are not permitted unless the work is done at night, all work being suspended during the daylight hours and the hole covered with steel plates in order that traffic may not be interrupted.

—This statement is based on information furnished by John C. Shaw, City Engineer, Board of Public Works, Los Angeles, Calif.

(To be continued in February)

Oil Treatment of Fine Crushed Rock and Gravel Roads

TWO general methods of oil treatment of fine crushed rock and gravel roads have been developed, which may be described, respectively, as the method of surface treatment, and the method of surface mixing. These are briefly described as follows:

Surface Treatment Method.—This treatment as practiced in Oregon and California contemplates the impregnation of the upper portion of a compacted fine crushed rock or gravel road with light asphaltic oil. The process resembles the ordinary surface treatment of macadam when light oils or tars are used, but differs from surface treatments with heavy oils in that there is no formation of a distinct mat of stone, chips, and binder. For practical reasons, some cover material is commonly used, but the amount is usually limited, and the light oil so penetrates the road crust that there is finally little left on the surface to be absorbed by the application of chips.

The first step in this process is the thorough sweeping of the existing road surface with a power broom, supplemented by hand brooming if necessary, to remove all loose material and scales of fines and expose the compacted rock surface. The light oil is then applied under pressure at the rate of about 3-10 of a gallon per square yard, and allowed to penetrate, the time required depending upon the texture of the surface and the viscosity of the oil. Usually two or three days is sufficient, during which time the road is closed to traffic if practicable. At this stage in Oregon small imperfections in the surface are repaired with a lean mixture of oil and aggregate.

When the first application of oil has thoroughly penetrated, a second is spread at the rate of about 2-10 of a gallon per square yard, and, as before, is allowed to stand for several days without traffic if possible, while the oil is being partially absorbed. The treatment is completed by spreading stone chips over the surface before the road is opened to traffic, and, if vehicles cannot longer be kept off, the chips are spread immediately after the second application of oil. The quantity of cover material usually used ranges from 10 to 25 pounds per square yard, depending upon the viscosity of the oil and whether or not the road is to be opened to traffic immediately. The larger amount is necessary if the road is to be opened immediately; and oils of high viscosity require more cover than the thinner oils.

There is a tendency in some places to modify the surface treatment method described, by substituting heavy road oil. As before stated, no recommendations have yet been formulated on this subject. It should be pointed out, however, that heavy road oil is more costly than "fuel oil," demands more equipment and better technique in application, and requires from 100 to 200 cubic yards per mile of screenings for cover.

Surface Mixing Method.—In the method of surface mixing, the surface of the previously constructed fine crushed rock or gravel road is first scarified to a uniform depth of 1½ to 3 inches according to the thickness of bituminous surface desired. The light asphaltic residual oil is then applied in two or three applications, each consisting usually of about ½ gallon per square yard; and after each application the oil and loose stone are partially mixed with a disk cultivator or a spring-tooth harrow, or both. The material is then bladed repeatedly into windrows and respread until a uniform color is attained. It is finally spread to the desired crown, and the road is then opened and continually dragged or bladed while it is being compacted by the traffic.

Roads treated by these methods are of distinctive type and are not to be confused with roads treated for dust-palliative purposes.

Rate-Cutting to Combat Municipal Competition

CHARGING that public service companies in several instances had reduced their rates for electricity in Iowa cities where municipally owned electric plants exist, below those of the cities' plants and below the rates in other cities served by the same companies where there were no municipal plants, in an apparent effort to destroy the competition of the latter, George A. Rice, City Attorney of Mapleton, Iowa, in a paper presented at the 1927 convention of the League of Iowa Municipalities, discusses the legal aspects of the matter. He comes to the conclusion that such rate-cutting constitutes illegal discrimination under the state law, and that relief might be had through criminal prosecution by county and state officials, although these sometimes do not have the problem at heart as do city officials.

With regard to this practice he says:

"The cost of production, transportation, or anything else, does not enter into this cut in rates, and the only possible purpose is to undersell the municipal plant, and destroy it by unfair competition. Not only are rates cut, but other inducements are offered, such as waiver of the customary meter deposit, the placing of irons, washing machines and other appliances on special low rates, contrary to general practice. In an effort to remedy this unfair practice, numerous city and town officials, and members and officers of the League of Iowa Municipalities have prepared an ordinance, the adoption and enforcement of which should bring relief."

In Iowa the cities, rather than a state commission, have the power of rate regulation, which, however, is hampered, when rate reductions are ordered, by the ability of the companies to resort to Federal courts and obtain rates based on so-called present value. Mr. Rice asserts that better relief is through municipal ownership.

High Valuation No Help

But Federal court support of rates based on present value naturally does not help the companies when city regulation seeks to prevent rate-cutting and in this instance the prevailing company policy of ample returns on high valuations is opposed to their interest in destroying competition.

Discussing the point of using city regulatory powers to prevent unfair discrimination, Mr. Rice cites particularly two Los Angeles cases (141 Pacific 620, and 143 Pacific 717). After reviewing many cases in Iowa and elsewhere, he concludes that city regulation in his state is valid for both maximum and minimum rates, subject to the Federal restriction mentioned above, and that ordinances to carry out such regulations are enforceable both by prosecution of violations as misdemeanors and by mandatory injunction.

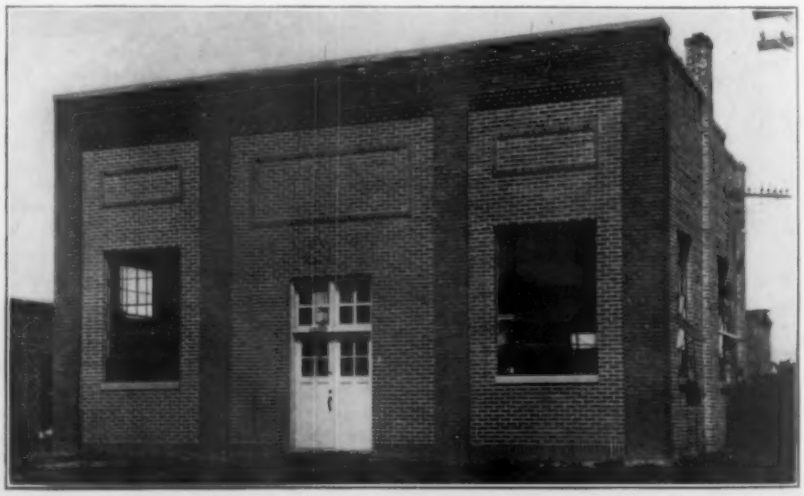
Mapleton's Experience

Mr. Rice's own municipality, Mapleton, Iowa, has had an experience with this problem, without, however, the necessity of going to court on the issue of rates. He states in *American Municipalities* that in 1922 customers of the electric company were paying 20 cents per kilowatt-hour and an additional charge of $1 per month. An order of the city to eliminate the $1 charge was met by a Federal injunction. A $50,000 bond proposal for the establishment of a municipal plant carried overwhelmingly, but selling of the bonds was enjoined by the company in 1923. The following year, the injunction having been removed and the company's application to the Supreme Court for a stay having been denied, the town let contracts for the construction of a plant. Another injunction was obtained, delaying progress until June, 1925; meanwhile, strong efforts were made to defeat the Mayor and Council, but without success. In 1925 the plant was finally built and placed in operation. Power was supplied by two duplicate 120-hp. diesel engines. Meanwhile, the electric company had reduced its rate from 20 cents to 17 cents and had abolished the $1 charge. In 1924 the local company sold out to the Iowa Light, Heat and Power Co., now the Iowa Public Service Co., the generating plant was abandoned and electrical energy supplied from that company's transmission line, and the rate further reduced to 15 cents. The municipal plant started operation with a 16-cent rate, whereupon the company dropped to 13 cents, which the city claims is less than the rate in any of the surrounding towns, served by the same line. Power and heating rates were reduced in proportion. The City Council then passed an ordinance fixing the lighting rate at 15 cents for all those supplying electricity in the town, and the municipal system made its rate to correspond; and in view of the financial showing of the latter plant the ordinance was amended, making the lighting rate 14 cents. Action was not brought to enforce the ordinance against the power company, however, as the gain in customers to be expected by the city plant would not justify the expense of carrying the case to the Supreme Court, and the city was already suing to oust the company from town on the grounds of its franchise being illegal and void. The State District Court has sustained the city in this suit.

A Decision in Nebraska

In Nebraska, where a situation similar to that in Iowa is stated to exist, a state district court has rendered a decision bearing on the question of rate-cutting.

Electric rates in Hartington, Nebr., according to articles in *Nebraska Municipalities*, had undergone a rapid metamorphosis since the establishment of a



MUNICIPAL ELECTRIC LIGHT AND POWER PLANT, MAPLETON, IOWA

plant in competition with the Cedar Light & Power Co., a subsidiary of the Interstate Power Co. The top rate of the old company had been 14 cents per kilowatt-hour before the Council granted a franchise to the Hartington Electric Co., a subsidiary of the Western States Utilities Co. A contract was made with this company to build a diesel-engine plant and turn it over to the city when the cost and interest had been repaid out of revenue, and a 9-cent top rate was established. Thereupon the Cedar Power & Light Co. cut its rate to 6 cents. Suit was brought, through Attorney-General Spillman of Nebraska, to prevent the company from cutting its rate in Hartington below what it or its sister companies were charging in 43 other municipalities in northwestern Nebraska.

Unfair Discrimination

Judge Ryan ruled that the old rate had been exorbitant, but that the 6-cent rate was below cost and violated the state anti-discrimination law. He said, however, informally, that because of difference in conditions the rates in one town should not determine those for another, and from the information at his disposal he established a minimum schedule with a top rate of 8 cents. His final decree, granting a permanent injunction, did not set a top rate, but restrained the company from charging less than cost and less than it charges under similar conditions elsewhere in that section of Nebraska, after making allowance for cost differences. Attorney-General Spillman stated when the case was decided, "It is a warning that any attempt to destroy piecemeal the competition that is invited by exorbitant rates, by cutting rates at one town and maintaining them at others served by the same company, will not be permitted by the court."

Trenton Considers Unique Proposal of Pay-As-You-Go City Planning

TRENTON, N. J.—This city has under consideration the final report of a city plan constituting an improvement program extending over 23 years. This will involve a total expenditure of about $18,000,000, which it is claimed is laid out in such a way that it will not saddle the city with an oppressive debt. On the contrary, the plan contemplates a steady reduction from the present amount of debt and the practical wiping out of all debt by the end of the improvement program period in 1950. The experts who have made this survey further contend that the tax rate should stay about the same as it is to-day. The present tax rate is $3.26 per hundred.

The plan does not propose a big bond issue, but stresses what might be called a long-range program of permanent improvements, arranged to cover requirements in the way of schools, streets and highways, parkways, railroad grade separation, parks and playgrounds, sewers, fire stations, city office quarters, libraries, welfare institutions and municipal dock and wharf requirements.

Trenton's margin of borrowing power to-day, within the seven per cent limitation, is approximately $1,000,000. According to the plan which has been submitted, the corresponding borrowing power in 1950, after the completion of all of these public improvements, will be in excess of $20,000,000.

The very slight present margin of borrowing power suggested that a practical city planning program for Trenton must necessarily avoid any large commitments. Moreover, Trenton's debt retirement program in the past has been so shaped as to facilitate a large measure of application of the pay-as-you-go program for future improvements. The present debt is represented principally by serial bonds and Trenton is now paying these off at a particularly rapid rate. Debt service charges will decline rapidly after 1935 and the residual sinking fund requirements for the small amount of term bonds now outstanding will, by the year 1940, be less than $60,000.

The Trenton City Commission last year decided to formulate a comprehensive city plan. We engaged the Technical Advisory Corporation of New York with the express stipulation that the plan program would include not merely the usual order of urgency or sequence of improvements, but also a definite budgeting system. Thus the program of improvements includes a plan of financing year by year based upon the city's probable revenues and obligations.

While we are thus hopeful of minimizing the application of any installment plan in our improvement program, we fully realize that there are some "ifs" and "ands" about it. All of these have been considered. We anticipate that general operating costs can be kept about constant per capita. It is true that they have been steadily increasing everywhere; but there is reason to believe, we hope, that now the worst is over and that we have about reached the new high level of taxation and will, for a period at least, go no higher: taxes are high enough. Our program contemplates one very moderate advance in the tax rate, beginning in 1930. Perhaps this will be all that is necessary. Even if operating costs do increase more rapidly than we anticipate, there is a possible margin in Trenton because of the fact that miscellaneous revenues are disproportionately low. If need arises there should be room for an increase in such revenues.

The calculations assume that assessed valuations will increase, not merely absolutely, but also per capita. A careful examination of the records from all cities in the United States indicates that valuations are generally and on the average higher per capita in the larger cities. We have been conservative in drawing any deductions from this fact and have assumed that this valuation index will increase only slowly and slightly and not immediately.

On the whole, therefore, while there are always possible contingencies, it looks as if the Trenton city plan may be worked out substantially as outlined. In fact, it is possible to argue that a city plan is itself a device for taking care of what would otherwise be contingencies.

FREDERICK W. DONNELLY, Mayor.

To the Realtor Good Civics Is Good Business

"MY associates and I purchased the half-built palace of an insolvent merchant in Memphis, together with a large plot of land. We presented it to the city on the condition that it be made a recreation center, library, or museum for public use. It was accepted on those terms, and Mayor Paine said that I had given Memphis $450,000. I did not. I believe that every penny that land is worth will come to my company in the increased value given the lots surrounding the piece we deeded to the city."

Thus spoke C. C. Hieatt, of Louisville, Ky., President of the National Association of Real Estate Boards, in a speech before the National Recreation Congress, in Memphis, and went on to explain that parks and playgrounds are being laid out in real estate subdivisions because they "put money into the pockets of realtors in addition to providing healthful places for old and young to play."

"It would be foolish," added Mr. Hieatt, "for me to stand up here and tell you that we are giving away millions of dollars' worth of valuable land just for love of humanity. It is a case of good horse sense combined with an ideal of city planning and civic service that has started the movement for golf courses, tennis courts, bathing beaches, and play areas in new subdivisions."

He showed how planners are beginning to learn from earlier mistakes, as, for instance, in Louisville, where "a short-sighted city council years ago spoiled the results of the wise city planning of the city's founders by selling off fourteen of the fifteen city squares set aside for a park. The land they sold is occupied by the community's worst slums."

Realtors, Mr. Hieatt explained, are keenly interesting themselves in sound city planning, and their activities in behalf of provision for more adequate recreational areas in the laying out of new subdivisions are being carried on hand in hand with a campaign for the better control of the billboard nuisance and the conservation of land values throughout their communities.

Water-Works Construction and Operation in Tientsin

Artesian Well System Substituted for River Water in Foreign Settlement

By H. F. WILKINS

DESPITE the ever present danger of Chinese intervention and military conquest in northern China, construction of community enterprises and private works goes on in the great foreign settlement of Tientsin as if this were the most tranquil spot on the globe. One of the most interesting undertakings in the Far East, and the first of its kind in this part of the world, is the scheme of the British Municipal Council in Tientsin for a deep-well system to supply pure water for the British and ex-German concessions, where most of the Americans in Tientsin live.

One of the great problems for the foreign resident of China always has been and always will be the purification of water-supplies. Travelers always are warned never to eat green fruits or vegetables and never to drink unboiled water.

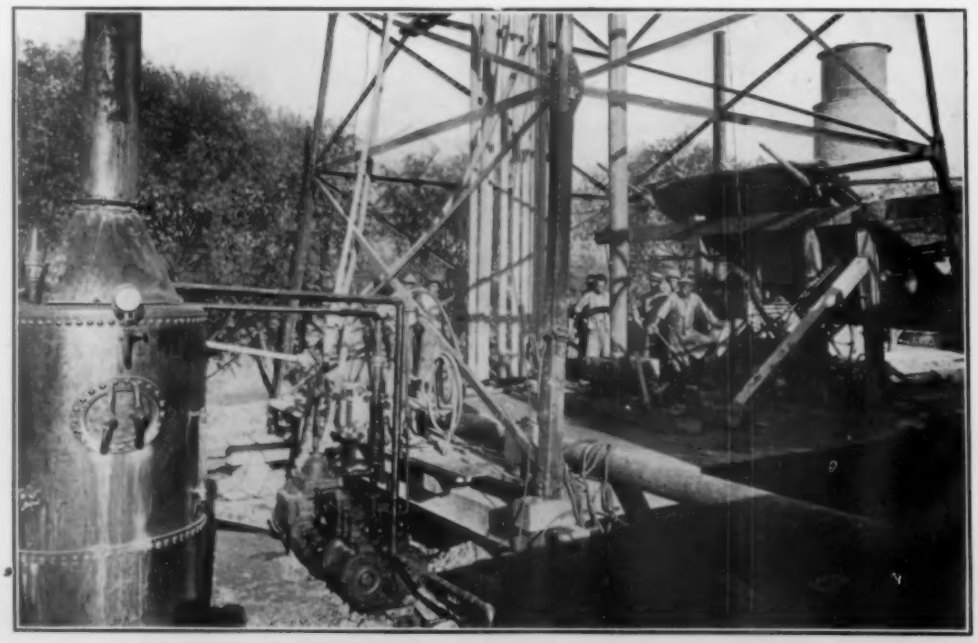
Tientsin's sole source of water always had been the muddy Hai-Ho River, which flows through the city on its way to the Yellow Sea, until, in 1925, the British Municipal Council undertook to bore a deep well in the water-works compound. After a failure with Chinese boring methods, an American drilling-rig was hired from the China Deep Well Boring Co., of Shanghai, and a tube was sunk to a depth of 460 feet. Here strata were encountered which have been yielding around 300,000 gallons a day for more than a year. So successful was the experiment that the Council launched out on a comprehensive scheme of stepped wells which by the end of 1927 will be supplying the entire area with 100 per cent well water from three stations, each with a normal output capacity of 500,000 gallons and each equipped with a 1,000,000-gallon reservoir, a pump-house, shops and offices. Five wells have already been sunk in addition to the first successful one, and it is estimated that the combined flow of the six wells will be ample for the present and futue needs of the area.

An Adventure in Deep-Well Boring

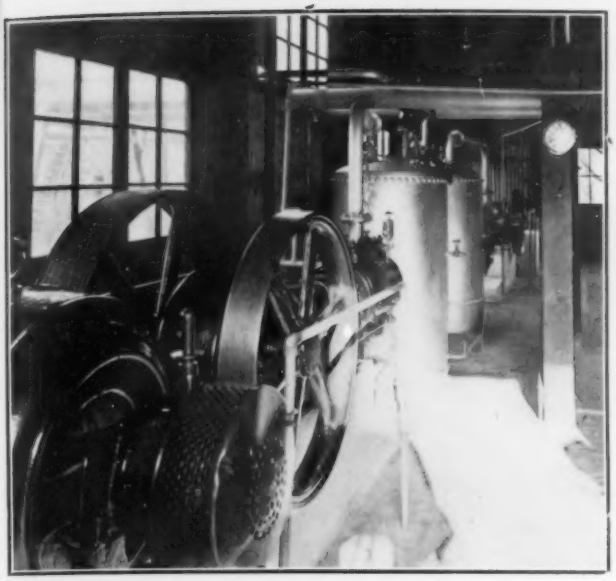
F. W. G. Clark, water-works engineer for the British Municipal Council, recounts a curious experience with first attempts at boring a deep well in the compound. The contractor used a primitive affair consisting of a wooden tripod, a winch and a steam pump. The casing was slung from the tripod and forced into the ground by pumping water through it under pressure. During this process the casing was partially rotated by laborers using pipe tongs for leverage. The Chinese conception of hydraulic drilling proved thoroughly inadequate. The result was a series of mushroom cavities that finally caused the failure of the well. When pumping operations started, the casing sank and "caving-up" through the bottom occurred.

CHINESE WELL DRILLING METHODS, SHOWING CREW SPUDDING-IN WITH A RIG THAT FAILED TO REACH WATER

The oil-well drilling outfit from Shanghai was more successful. Another bore was started a few feet from the first and a 6-inch tube sunk to 460 feet in a fine gray sand bed and fitted with 42 feet of special screen to deal with the very fine sand of the water-bearing



THE AMERICAN OIL-WELL DRILLING OUTFIT WHICH WAS BROUGHT UP TO TIENTSIN FROM SHANGHAI AND WAS SUCCESSFUL IN DRILLING FOR WATER



AIR-WELL PUMPING-PLANT IN TIENTSIN, SHOWING TWO INGERSOLL-RAND COMPRESSORS

strata. This well and another one sunk to a depth of 340 feet on the same site in the compound are both being pumped with air-lift at the rate of 27,000 gallons an hour, using two 9- by 8-inch close-belted Ingersoll-Rand compressors with 35-horsepower Siemens motors. The pumping-plant is located alongside the wells and close to the reservoir. The Ingersoll-Rand compressor first used was found so successful, Mr. Clark said, that two new ones were purchased to replace the hired one that lifted the first water.

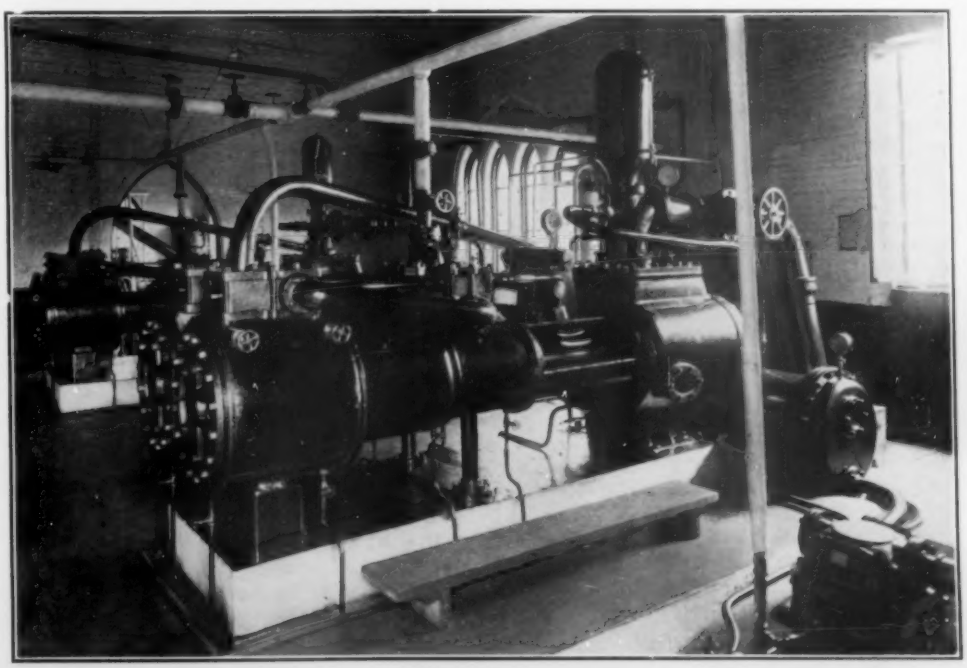
The net depth of the two wells at the so-called Douglas Road station is 334 feet and 424 feet, and the last two at the London Road station were put down to 636 and 542 feet. Their output will be turned into the mains when the stations are fully completed. Meantime they are being kept open with the contractor's Ingersoll-Rand compressor and with a small Broom & Wade portable.

The China Deep Well Boring Co. tendered a contract price of 40,000 taels (about $30,000 American money) for boring the last five wells, and these were done successfully. Construction work for the reservoir and buildings on the Douglas Road station was opened to competitive design, and the China Construction Co. was awarded the contract at 66,900 taels, or $52,000 in gold. The design of the reservoir conforms to latest practice in reinforced concrete construction and has special features to insure watertightness and to provide for expansion and unbalanced loads. The reservoir is divided into two units of 500,000 gallons each, and the valve- and weir-houses are incorporated in the main structure. The upper works of the pump-house and outbuildings is in machine-made red brick, and the whole is attractively designed. When complete, all three compounds will be landscaped.

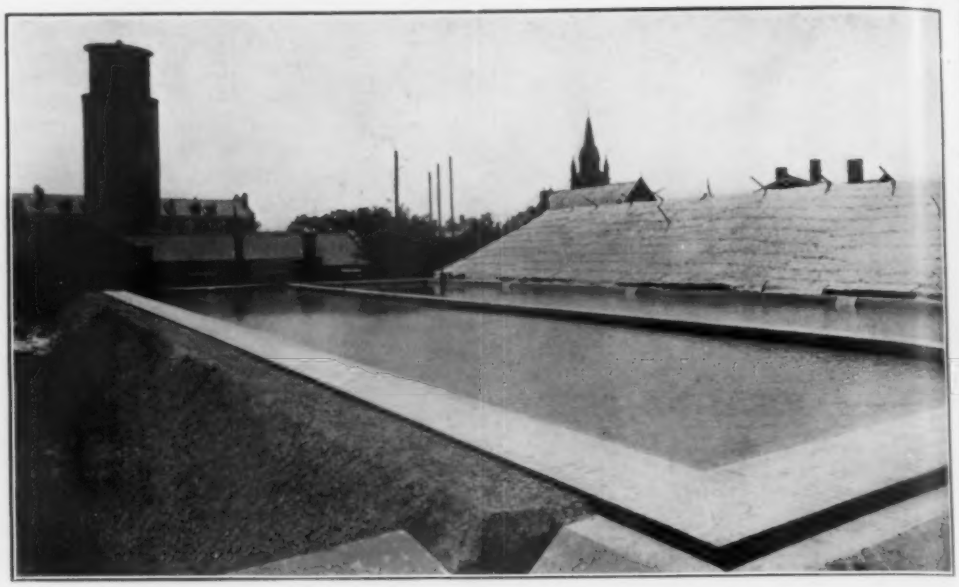
The Plant and Its Operation

The new artesian well system is not the only interesting thing about the British municipal water-works in Tientsin. It is replacing a slow gravity filter plant and pumping-station which has served the area since 1899 and which recent improvements and expansion have brought to a thoroughly efficient level. Previous to five years ago, the plant was operated by a private company under franchise. Since the plant has been under municipal ownership and in charge of Mr. Clark, 10 miles of new mains have been added. In 1926, 333 new installations were connected to the distribution mains, an increase of nearly 300 per cent over the preceding year. This is a long step from the days when all the water used in the area was hand-drawn in buckets from the river and boiled to kill the bacteria.

The intake station is on the bund or waterfront of the British concession, and the intake delivery to the works station 550 yards distant is a cast iron main of 11 inches diameter. A belt-driven Gwynne centrifugal pump with a 40-horse Lancashire electric motor and an 8-inch Allen centrifugal with a 25-horse G. E. motor are used in the pump-house at the intake station. The raw water is pumped from the river to the works station, and the treatment is by settling for twelve to sixteen hours and filtration through a slow gravity sand filter. Alum coagulant is used if the con-



MAIN PUMPING-PLANT OF THE BRITISH SETTLEMENT IN TIENTSIN, SHOWING THE WORTHINGTON PUMPS INSTALLED TWENTY-FIVE YEARS AGO TO FURNISH WATER FROM THE HAI-HO RIVER



SETTLING-BASINS OF THE TIENTSIN WATER-WORKS HAVING A COMBINED CAPACITY OF 500,000 GALLONS

The old tower shown in the background is now used as a standpipe

dition of the raw water calls for it, and pre-chlorination is used at all times. The well water is not treated but pumped direct to the filtered-water reserve tanks. Health authorities approve both samples. All research work is done under the supervision of Mr. Clark by French medical officers connected with the Chinese Naval Medical College.

The Pumping-Station

The main pumping-station has three settling-tanks of 200,000 gallons capacity and one of 90,000 gallons. These are of steel construction with brick shells for frost protection. In addition, there is a sedimentation basin of 500,000 gallons capacity, nine slow gravity filters of a total area of 13,760 square feet with 2½ feet of sand and 6 inches of gravel on the beds, a clear-water tank of 60,000 gallons capacity, masonry construction and iron roof for frost protection, and a filtered-water storage reservoir of 500,000 gallons capacity in one of the unused sections of the sedimentation basins.

Pumping machinery consists of two Worthington duplex compound condensing pumps, 14 and 20 by 12 by 15; one pump of the same make and type, 12 and 17 by 10 by 15; and two Mumford duplex compound condensing-pumps, 7 and 12 by 9 by 7. The pumping pressure at the station is 37½ pounds to the square inch. This will be raised to 80 pounds when the artesian wells are put into full use. Also, there is a booster pump located on the town side of the 91-foot water-tower (which is now used as a standpipe) used to raise pressure up to 50 pounds for fire service or to meet an emergency draught. This has a belt-driven 8-inch class "C" Worthington centrifugal pump with a 20-horsepower Marelli motor.

A 10-inch main leads out from the works compound into the distribution system. This was mainly 4-inch piping, but since 1923 much of it has been changed over to 6-inch, and all the new mains are of that type. Leakage inspection is systematic and thorough. To protect them from severe frosts, mains are laid at an average depth of 4 feet. Fire-hydrants are located at the corners of all blocks and at an average of 400 feet apart. The department supplies and maintains all meters free of cost to consumers. The rate charged to consumers in the British concession is $1 (Mex.) per 1,000 gallons. This is a little less than 50 cents, American money, at the present rate of exchange. The department lays house services to 6 feet inside the street boundary wall free of charge.

All street work is done under contract by a Chinese firm, employing native labor and using no modern tools excepting two Little Giant pipe pushers made by the Giant Manufacturing Co., of Council Bluffs, Iowa.

A Chinese Contract

It is interesting to examine a contract between the Council and the contractor, a Chinese named Kuo Fu Yu, who comes from a long and illustrious family of excavation contractors in Chihli province. He furnishes the labor and does the work efficiently according to specifications—very efficiently for a Chinese. Here is what he agrees to when he signs a contract:

To start on any road within 24 hours of receiving instructions to do so; to carry on work steadily and continuously on any one length until completed; to arrange the time of start and the rate of work so that no trench is open 24 hours after notice is given to fill; to supply all labor, tools and equipment for cutting and backfilling at his own expense.

Here is a typical set of specifications: Excavation to be made first over the part in which a new main is to be laid; width and depth of trench to be excavated according to instructions as given in each case; trenches must be shored up and kept free of water wherever bad ground is encountered; bottom to be well rammed after trench is excavated and laid with 6 inches of broken brick (supplied by the Council); filling to be carefully done in 6-inch layers, and well rammed as laid, and finished at such depth below the road surface as may be instructed each time.

The pay for such work is astoundingly cheap—for earth, ash and macadam surfaced roads, 55 cents (Mex.) per *fang*, or 100 cubic feet, and for brick, asphalt and hard-surfaced roads, 85 cents per *fang*. All roads are backfilled for 35 cents a *fang*. No wonder it is cheaper to hire coolie labor than to import modern trench-digging apparatus!

The water-works staff, all under the supervision of Mr. Clark, consists of an assistant engineer, John Lilly; a works foreman; eleven native office assistants and five meter inspectors; and 60 native workmen—fitters, drivers, firemen, filter operators, coolies and so on. The whole plant was operated on a budget of a little more than $100,000 (gold) last year, with an excess income over expenditure of about $12,000 after paying 8 per cent on capital and providing a sum of $8,100 for depreciation.

Home Rule as an Aid to Municipal Experimentation

HOME rule would produce variety in municipal administration, rather than uniformity. We should thus have in every state a number of experiment stations of administration, taxation, and social betterment, each seeking a solution of its local problem and each contributing to the political experience of the country.

—FREDERIC C. HOWE.

PORTION OF COMPLETED DISK MARKING AT FOUR CORNERS (BROAD AND MARKET STREETS) SHOWING WORD "STOP" AND STAGGERED PEDESTRIAN ROUTE LINES AFTER THREE MONTHS' SERVICE

Pavement Marking with Metal Disks

By CHESTER MUELLER

ASSISTANT ENGINEER, DEPARTMENT OF PUBLIC AFFAIRS, NEWARK, N. J.

RECENTLY, Director William J. Brennan of the Department of Public Safety, of Newark, decided to replace some of the familiar white paint lines with a more permanent form of marking by embedding metal disks in the pavement. Engineers of the Bureau of Streets were called upon to lay out the necessary lines and to supervise the installation.

In this city, the purpose of the metal markers, like that of the paint lines, is to define pedestrian lanes and "stop" lines at intersections. To accomplish this, metal disks 3 inches in diameter have been regularly spaced in the pavement along the desired lines, presenting to the eyes of the motorist and the pedestrian a visible attractive guide. In replacing the white paint, no hope was entertained of obtaining lines more conspicuous, the question of ultimate economy and semi-permanency being the controlling factors. To make the metal marked lines more nearly approach the effectiveness of the white paint lines is yet our objective.

Since many types of markers are on the market differing in composition, size, adaptability and price, the choice of metal from the standpoint of visibility must be weighed with these other factors. Newark has used three distinctive types of disks and has carefully considered and is considering the advisability of using some of the others. Monel metal marked lines appear brightest; their cost is relatively high, but a trial installation has just been ordered for cross walks near the Hudson Tubes terminal. Brass and aluminum disks, while less bright, are comparatively inexpensive and have been used extensively. Besides these, a patented form of marker called a "Markette" has proved to be very satisfactory in this city. Traffic serves to keep the metals shiny and, except when the pavement is covered by a film of dirt-laden moisture, the line is clearly discernible to the motorist while he is yet some distance away.

Securing Maximum Visibility

The closer the spacing, consistent with the conservation of the pavement surface and with economy, the more visible the line will be. The first lines in Newark were defined by spacing 3 inch diameter brass disks on 8 inch centers along a straight line. This arrangement makes the visibility of the lines perfect from the pedestrian's viewpoint, since his eye looks along their length. To make the lines broader and more evident to the motorist with the same number of units, all succeeding lines are formed by offsetting every second disk from the original line by 3 inches. While metal-marked lines are satisfactory substitutes for most white paint lines, it does not appear feasible to attempt to designate complicated lines by means of the "dotted lines." In addition to marking the lines, the word "Stop" is outlined in the roadway by placing disks in single alignment on 5 inch centers. The letters are about 3½ feet high and 1½ feet wide, the long, narrow letters with close disk spacing being so designed for the benefit of the motorist.

In addition to the question of appearance, it is the problem of installation that largely influences the choice of the markers. Since out of a total of 315 miles of pavement in Newark, 112 miles are of asphalt, most of the principal arteries being so paved, embedding the markers in asphalt is the most important task. So far, the only installations in Newark have been in sheet asphalt and bitulithic surfaces. All types of disks have some form of anchoring device by which the metal is held in the pavement. Some are adapted only to asphalt surfaces, others being suited to all pavements. Practically all are installed to be slightly above or flush with the pavement, with no projecting edges subject to being torn up by traffic.

The 3-inch diameter brass and aluminum disks used in Newark are made of metal about 1/16 inch in thickness, and dish-shaped, having vertical sides ¼ inch deep. Inverting the "dish" and applying force cause the circular edge to penetrate the asphalt for a distance of ¼ inch and to anchor the disk in place. When this solid disk is

being forced into the asphalt, the contained air is compressed and in addition to hindering installation is believed to weaken the bond between the metal and the asphalt. Disks of this design now have a small hole through their surface to remedy this condition. Markettes have three sharp-pointed triangular prongs punched out of the metal surface and turned down at right angles to serve as anchors. Less area of metal is visible per unit, for a given diameter, with this type; however, the pointed and seared projections penetrate even fairly cool asphalt, whereas the brass and aluminum disks with their greater length of cutting edge require a temperature of at least 60 degrees F. In bitulithic pavement the solid circular cutting edges of the latter experience difficulty on encountering the coarse aggregate; markers with less cutting-edge area may be easily installed.

Ramming the disks in place by hand labor is perfectly feasible, but for economy Newark utilizes a steam roller. This method requires that the disk remain upright on its cutting edges, be sufficiently stable to remain in place and sufficiently rigid to retain its shape while the roller passes onto and over it. With ideal conditions and care in installing, i.e., with warm pavement and a heavy roller passing slowly over one disk at a time, no trouble is experienced in embedding any of the types used in Newark. With less favorable conditions some of our brass and a good many of our aluminum disks flatten out instead of penetrating.

APPEARANCE OF STRAIGHT LINES AT BROAD AND SOUTH STREETS AFTER A YEAR AND ONE HALF OF SERVICE

Note two disks in foreground which appear raised. These lines were installed in a cool pavement, the solid brass disks being used. The edges of the two disks flattened slightly under the roller and undercut the surrounding asphalt, which traffic has since ground out

The marking of intersections is handled in the following manner: The Police Department designates the intersection and the lines to be marked and furnishes experienced traffic officers to expedite the work. The engineers make most of the necessary measurements along the curb lines and, by timing the work with the changes in flow of traffic, little delay is caused. During a customary halt in traffic a chalked line is stretched across one street and the pedestrian lanes marked. During the same intermission the line is reinforced and marked at every 8 inches with lumber crayon, although if an interval of traffic does pass over the chalk lines they will not be entirely obliterated. When all the lines are laid out, and traffic halts, the disks are laid at the points marked and the roller brought into action. Three or four passages of the roller embeds the disks. To mark correctly, the word "Stop," 2½- by 4-feet sheets of beaver board, having the letters cut out to a 3-inch width, are used as patterns. The four sheets are laid on the pavement and trued to the proper line and spacing, and the letters outlined with crayon. At a subsequent interruption in traffic the disks are laid in place and rolled in.

This method has enabled the installation of four words "Stop" (about 350 disks used) in less than 45 minutes, and the installation of lines at the rate of 400 units per hour at Broad and Market Streets, conceded to be the world's second busiest intersection, on a week-day afternoon. The force employed in this work consists of one roller, a laborer and five men to measure and lay out the disks. With this force and using the method outlined above, very little inconvenience or delay to traffic is caused.

Painting white lines results either in considerable delay to traffic, or lines smudged by traffic, and to be properly maintained the painted lines might require (but not necessarily receive) renewal once a month for at least eight months of the year. The metal disks once installed, remain in the pavement winter and summer, traffic brightening rather than obliterating the lines. Considering the advantages and disadvantages of both kinds of lines, the metal marked ones fare best in the comparison.

Courtesy of Newark Evening News

ROLLING DOWN DISKS AT BROAD AND MARKET STREETS, NEWARK, FOR PEDESTRIAN ROUTES

APARTMENT BUILDINGS FOR THE EMPLOYEES OF THE SURFACE LINES IN BERLIN, GERMANY

Housing as an Activity of European Tramways

A COMMON practice in European cities is the provision of living quarters for some, at least, of the employees of the street-railway systems, at or directly adjacent to the carhouse. Apartments are frequently provided on upper stories of carhouse buildings, and some systems are providing more extensive housing on sites adjoining the carhouses. The *Electric Railway Journal* has recently illustrated and described this correlative feature of the tramways, as a part of a series of articles by Henry W. Blake, Senior Editor, on his observations of European urban transportation. THE AMERICAN CITY is indebted to Mr. Blake for the illustrations here shown, and for the following excerpt from one of his articles:

"The most extensive undertaking of this kind is undoubtedly that of the Berlin Surface Lines. This company has erected apartment buildings adjoining eight of its carhouses, the buildings having from 58 to 247 sets of apartments each. The largest of these employee apartment houses is one completed during the last six months adjoining a 300-car capacity carhouse on Müllerstrasse. This structure occupies an entire block, with the carhouse in the middle of one side, and it contains ten single-room apartments, 165 two-room apartments and 72 three-room apartments. In this classification only living-rooms are counted, i. e., not the kitchen, bath or hall. Thus, a two-room apartment would have besides these three rooms, two good-sized rooms suitable for general purposes in the daytime and for sleeping at night. The sizes of these rooms in the two-room apartment illustrated are 16 feet 3 inches x 13 feet 6 inches and 12 feet 2 inches x 12 feet 6 inches. In addition, nearly every apartment has a balcony. All the way in front of the apartment building toward the center is space for flower-beds. Half of the cost of these buildings was furnished by the Berlin Street Railway, which is owned by the city. The other half of the cost was furnished at low interest terms by another department of the city government, known as the Wohnungsfürsorge Gesellschaft.

"These apartments are rented to employees at a rate which is considerably less than would be paid for corresponding accommodations in an outside apartment house. There is also the understanding that they are primarily for employees of the company, and while a tenant is not obliged to vacate if he ceases to remain in the employ of the company, his lease provides that he shall then pay a higher rental. The aggregate rentals are based on providing a sinking-fund of 1 per cent a year on the cost of the buildings after paying maintenance and interest . . . .

"The rate of labor turnover on the Continent is less than that on many American roads. Men who accept employment seem to do so with the idea of remaining indefinitely in the service. This condition, obviously, simplifies the question of the erection of housing accommodations."

ONE OF THE MÜLLERSTRASSE APARTMENT HOUSES, BERLIN

City Cooperation Helps Street-Car Company Win National Award

THE Charles A. Coffin award "for the most distinguished contribution to the development of electrical railway transportation" went to the Grand Rapids Railroad Co., of Grand Rapids, Mich., in 1927. L. J. Delamarter is Vice-President and General Manager. The company is a subsidiary of the Commonwealth Power Co., one of the Hodenpyl-Hardy interests.

The story of how the company won this award dates back to 1918, when the company, with the falling-off in patronage due to the increasing use of automobiles for individual transportation, became in need of increased street-railway fares. Negotiations were commenced with the city looking to an alteration of the franchise with such an end in view. Grand Rapids had, in 1918, gone under the commission-manager form of government. The Commission was composed of business men who saw the necessity of preserving adequate street-railway transportation for the municipality, while at the same time protecting the city's interests.

The company furnished the city with complete reports of operation costs. Valuation studies were made, and after deliberations extending over a period of six months, the city and the company agreed upon a fair value as of January 1, 1922, of $5,500,000, a reduction of $2,500,000 from the valuation of about $8,000,000 which the company claimed when the negotiations were started. This was taken as a basis for a new franchise. Upon it, the company was given the right to earn 8 per cent.

The franchise was drafted by City Attorney Ganson Taggart, in cooperation with the Engineering Department. It is flexible in many of its provisions, so designed to enable the company to adjust its operations to fluctuations of patronage. A sliding scale of fare was adopted, ranging from five cents to ten cents, with a privilege of selling tickets

at a shade less than the single fare rate. The franchise was adopted September 22, 1922.

The new scale was initiated under a fare of ten cents and seven tickets for fifty cents. As receipts fell below operating expenses, the number of tickets for fifty cents was reduced to six. This was found to produce a revenue sufficiently higher than expenses to enable the company to embark upon a plan of rehabilitation.

Throughout all negotiations the city depended upon its own Engineer, Gerald J. Wagner. He worked out the "fair value" as agreed to by the company's engineers, and the "service at cost" flexible schedule of fares for the franchise. Shortly after the adoption of the franchise he resigned as Director of Public Service, but was retained by the city as consulting engineer to supervise for the city the operations of the company. He still continues in that capacity, though serving also several other cities in public utility matters.

The franchise provides that the company furnish monthly reports to the city covering all its operations. Plans for extensions, alterations, purchases and, in short, for every proposed move bearing upon cost of service and regulation of fares, must be submitted to the city commission for approval. In 1924 the company was temporarily re-financed. In 1926 a permanent re-financing, in which the holding company relinquished equities valued at $600,000, was effected. This makes it much easier for the company to meet its obligations under the franchise.

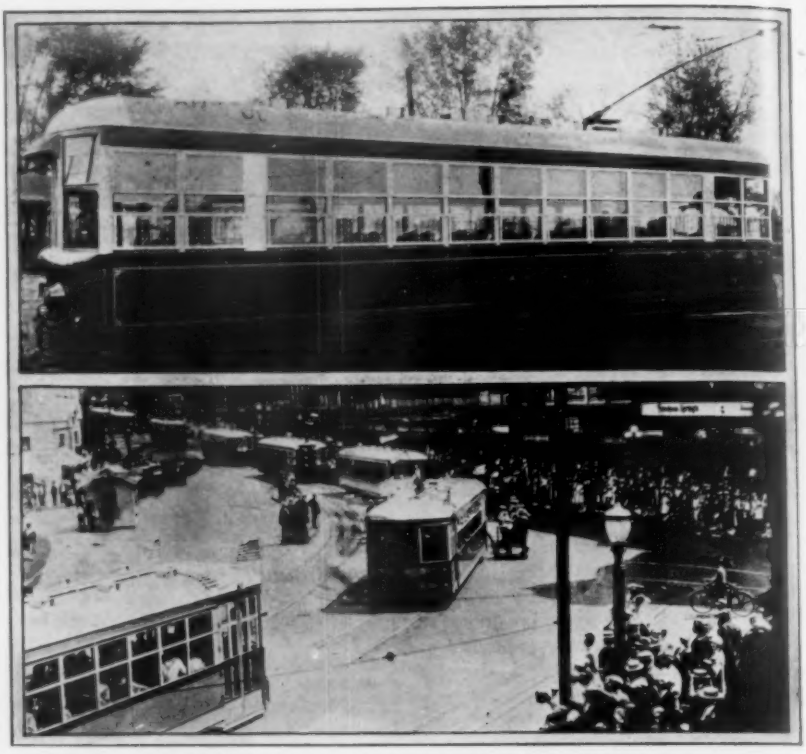
In 1924 the company suffered a fire which destroyed fifty cars. With the approval of the city, the company decided to replace its stock with the finest. Car-building companies in three cities were invited to compete for the forthcoming order. All built samples and shipped them to the city, where they were tried out for about a year, the public being invited to express an opinion as to which it liked best. The order for the new rolling stock finally went to the St. Louis Car Company.

As the cars are described in the *Electric Railway Journal*, "the main features are the comfort and beauty of soft leather bucket-type automobile seats, mosaic rubber tile floor covering, special illumination, cabinet-inclosed control mechanism, easy ingress and egress, bright colored painting and streamline body with aprons emphasizing the low-hung appearance, notable noiselessness, beauty of large plate glass vestibule windows and illuminated dash."

The Grand Rapids franchise, instead of being drawn largely by attorneys for the company, as has been the case all too often, was prepared by the City Attorney, cooperating with the city's own Engineer, with the idea of obtaining city supervision of all operations and undertakings of the company.

Though the company is permitted by the franchise to earn 8 per cent on its fixed valuation, it has not done so. At the same time, it has produced sufficient net revenue to enable it gradually to rebuild its properties, and to obtain the new rolling stock, which enabled it to win the C. A. Coffin award. City officials believe the supervision provided by the franchise thus far has worked out very well.

MORRIS J. WHITE.



THE NEW STREET CARS IN GRAND RAPIDS, MICH.
The lower photograph shows the parade of the 30 new cars when placed in services; above is a closer view of one. Each bears the name of a prominent former citizen

Measuring the Results of Community Advertising

EXPRESSING the conviction that Chamber of Commerce men everywhere are becoming clearer in their own minds as to what constitutes feasible community objectives, and that they are studying such objectives more closely in relation to local problems, Wroe F. Alderson, of the Domestic Commerce Division of the Department of Commerce, outlined before the 1927 convention of the National Association of Commercial Organization Secretaries at Columbus, Ohio, some interesting recent developments in city programs for promotion through advertising. The Department of Commerce is about to publish a Community Advertising Bulletin prepared by Mr. Alderson, based on a study that had led the author to feel that any real measurement of the results of community advertising will be next to impossible until three things have come to pass:

1. That all promotional campaigns shall be based upon clearly defined objectives which are subject to attainment through promotional methods.

2. That intense city rivalries be replaced by the pooling of common interests where communities are trying to market identical advantages.

3. That several types of information having the most vital bearing on community promotion be collected at regular intervals.

An interesting illustration of the value of pleasant living conditions as a stimulus to city growth was cited by Mr. Alderson in his Columbus talk:

"Here and there are to be found Chamber of Commerce secretaries who proclaim that they do not desire rapid growth in their communities. They say that their little towns are quiet and lovely and their people wish them to remain so. The objectives proper to a metropolis, they believe, are not for them to pursue. Some of these towns are spending all the money which might go for promotion on various community improvements and facilities. And, ironically enough, they are finding that these civic accomplishments are bringing them unsolicited publicity, and settlers who hear of their pleasant living conditions are moving in and establishing homes."

The moral seems to be that the most important factors in worth-while city growth are an attractive community, well governed, and a contented, enthusiastic citizenship. Such a community, if it wishes to expand in population or industries, can tell its story to the world with confidence that it has something worth while to sell.

FORWARD STEPS

Reported by

Municipal Officials, Chamber of Commerce Executives, and Others

Attractive Electric Lighting Units Replace Last of Gas Lamps

ST. PAUL, MINN.—The final scrapping of all antiquated lighting units in the city of St. Paul took place in the past year. This change has been going on since 1915, when the old gasoline lights were first replaced with pendant 4,000-lumen lamps, followed by the replacing of the enclosed carbon-arc and the flaming-arc lamps in quick succession with 4,000- and 10,000-lumen incandescent lamps. Finally, approximately 1,600 gas lights were replaced with 2,792 1,000-lumen ornamental lights in the residential section.

As laid out, the system consists of standards with light centers 13 feet above the ground level, placed along both sides of the main streets in a staggered position with one light for an average of every 100 feet of street. On the side streets one light is placed at the alley intersections as a protection against footpads. These side streets usually have a length of 300 feet, and one light placed at the alley, together with the two lights placed at each street intersection, affords ample protection to the pedestrian.

A 1,000-lumen lamp is used at present in each standard, because of insufficient funds in the city's present budget. However, the system is laid out for the use of 2,500-lumen lamps, and increased illumination can be had by simply changing the lamps.

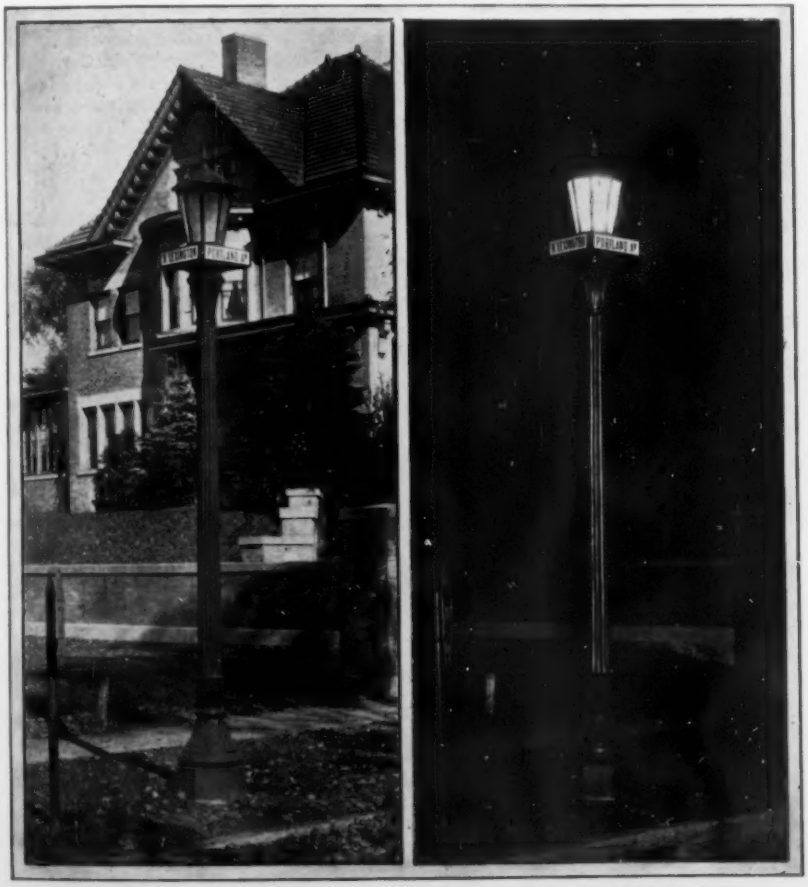
The series-series system of distribution is used throughout, of which each secondary group consists of approximately thirty lights. These secondary groups are fed from two-coil series transformers mounted on the Northern States Power Co.'s poles in the alley, thereby eliminating all high voltages from the underground circuits and from the standards. Groups of the transformers are then connected through overhead circuits to constant-current regulators located either at the station or on poles, and remote-controlled.

For underground distribution, No. 8 solid 1,000-volt 30 per cent rubber, lead-encased cable served with three layers of jute, is used. Steel tape was omited because it has been our experience that when steel-taped cable is damaged the defect does not immediately show up, making it more difficult to locate the fault, and almost impossible in some cases to place the responsibility. With the jute covering the cable is usually severed and both responsibility and location are immediately established.

The standards used are of combined pressed-steel and cast-iron construction. The design is one developed for the city and is the same for all posts used in the city. A lantern-type head was chosen, as we felt that because of its rigid construction and the relatively inexpensive glass panels used, the maintenance costs would be materially lessened. The standards and lanterns are of Westinghouse make, and are the city's property, together with the series transformers and the circuits from transformers to lamps.

The Department, with the cooperation of the Western Stamping & Manufacturing Co., of this city, developed an illuminated sign, which was placed on each of the two posts at all street intersections. This sign gives 24-hour service in that the sign is equally legible by night and by day. The sign utilizes the light usually wasted in the bottom of the fixture, by reflecting it through the etched lettered glass sign panels. In addition, the sign is made an integral part of the post, giving permanence and sightliness.

H. C. STREICH,
Superintendent of Lighting.



DAY AND NIGHT VIEWS OF ONE OF ST. PAUL'S ATTRACTIVE NEW LANTERNS AND STANDARDS

Visual Instruction Campaign Promotes Civic Cleanliness

PHILADELPHIA, PA.—Quietly, during the fifteen-minute intermissions at public band concerts last summer in Philadelphia, more than a million people from every grade of society were shown the possibilities of civic cleanliness by means of lantern slides. Following the slides, silently rebukeful pictures were flashed on the screen showing beautiful Fairmount Park rendered unsightly by empty bags, boxes, old newspapers, and other kinds of refuse.

Labor Day, which ended the season of outdoor concerts, marked the launching of a still bigger program for the silent teaching of civic cleanliness. The lantern slides, we all knew, were inadequate, but the motion pictures which we desired were impossible, owing to our lack of money. The popularity of the slides, however, and the great possibilities in this form of education aroused the interest of the *Public Ledger*, and its management promptly answered the appeal and agreed to finance

the Joint Committee in its work of providing the kind of pictures preferred. Motion pictures of street conditions are now nearly ready for exhibition. They will be shown in the public schools with the cordial cooperation of the Superintendent, and to such clubs as may request them. A number of boys' clubs have asked for the exhibition, and various women's organizations have put themselves on the waiting list. In the preparation of these motion pictures, as well as of the lantern slides, the Bureau of Street Cleaning has done the work and the Joint Committee from the women's clubs has provided the money, through the above-mentioned means.

Philadelphia is the first city in America to adopt the new silent method of teaching civics, which has already been productive of remarkable results in Rome, and which has been introduced in Paris and in Madrid. When I was in Rome last year, I was greatly impressed by seeing the pictures which were exhibited in the public squares, and the effect which these pictures had on the habits of the people. I was even more impressed when I learned that the Italian Government has offered to the Assembly of the League of Nations "an International Institute of Educational Cinema" to be maintained in Rome at the expense of the Italian people, under the supervision of the League of Nations. Mussolini's idea is that "the successful application of moving pictures to the intellectual elevation of a nation should be extended throughout the world as a benefit to humanity, and that such an institute supervised by the League of Nations would be helpful to governments, public and private institutions, and commercial enterprises, and diffuse useful information of every kind by film."

The main purpose of this proposed International Institute of Educational Cinema is to teach the public the privileges and obligations of citizenship. Instead of meetings, speeches, and discussions resorted to in the past, this new-style teaching of civics will arouse the dormant civic conscience through visual instruction.

Philadelphia's response to the idea was surprising and exceptionally encouraging. Not only the city officials, but women's organizations, men's clubs, and all sorts of societies representative of a wide variety of interests, showed hearty approval. One short summer of visual education in street cleaning cannot be expected to change the untidy habits of a big city like Philadelphia, but the very genuine interest aroused is a hopeful augury of ultimate success. We are justified in expecting results from this winter's campaign in schools and clubs, results which will not only show improvement in street conditions but help to create a love of beauty for its own sake. Contrast has been the keynote of our whole program, and the pictures of littered streets have always been followed with views of clean streets and spotless parks.

IMOGEN B. OAKLEY,
Chairman, Joint Committee on Open-Air Pictures, Philadelphia Civic Club.

THIS IS NOT A COLOSSAL BASEBALL, BUT THE NEW "HORTONSPHERE" DISTRICT GAS STORAGE TANK IN NORWICH, CONN.

Solving the Old Problem of the Unsightly Gas Storage Tank

NORWICH, CONN.—That cities should be attractive throughout all their varying neighborhoods, is becoming a point of policy in American municipal administration. The scientific planning and zoning of a city, as we know in Norwich, is no longer a mere matter of engineering, but is an esthetic matter as well. Municipal officials everywhere are beginning to recognize the responsibility for making public buildings (when public buildings are in order) beautiful as well as scientifically efficient. Street systems are no longer laid out by city engineers without due regard to their harmonious lines and curves. Parkways and open spaces nowadays must be scenically landscaped. Even street-lighting standards, traffic towers, and all such public-service accessories are beginning to be considered "public art" no less than public utilities.

More and more, private building is beginning to come under the control of city officials, so much so that national planning and zoning authorities are already telling us of that not far distant day when it is expected that every American city will have its architectural board just as it now has its zoning board. This board will be expected to pass upon every new structure undertaken in any neighborhood of a city or town, and not only as to the merits of that structure as an individual architectural creation, but also with due regard to its harmony with neighboring buildings, all of which will fit into a well-planned scheme of construction.

Gas houses and gas storage tanks have in the past been among the most notorious offenders against the civic probity of their neighborhoods. In large cities, they have been chiefly centered in industrial sections and such neighborhoods as have given the term "gas-house gangs" a meaning synonymous with the most highly organized and criminal elements of underworld life. And when, in the history of cities, the time has inevitably come when the central storage system was no longer adequate, and district storage tanks were erected, it has ordinarily meant the "blighting" of new neighborhoods. This is a problem that the history of American cities will show to have caused the conscientious official much concern.

This old problem has begun to be solved in a new way, thoroughly in keeping with the new ideas of civic beautification. The humblest of public service utilities are qualifying for a place in the landscape. It is a matter of self-congratulation for Norwich, and a matter which entitles her to a place of prominence among American cities in this new rivalry to improve their physical appearance, that she has been among the very first to demonstrate that the proverbial old eyesore may be transformed into an element of beauty. The city's new pressure storage tank, surrounded by attractive planting in an open space, is a gleaming sphere that has the appearance at a first glance of a colossal baseball. It is an affirmative answer to the question which has so often been asked by city officials in the past, and hitherto always answered in the negative: Is there any way of effectively disguising gas tanks or otherwise rendering them less objectionable?

M. R. WATERS,
Mayor.

Demonstrating Home Building

ATTLEBORO, MASS.—Three years ago the building of homes in Attleboro was practically at a standstill. The Directors of the Chamber of Commerce worked out a plan to stimulate and encourage home building, and in three years their efforts were crowned with success.

Three moderately priced demonstration houses were erected, one each in 1925, 1926, and 1927, to give the prospective home owner some idea of what he could hope to secure for a small investment. These homes were completely furnished and opened for public inspection.

The first demonstration house, of Dutch Colonial type, cost $7,300, including house,

lot, grading, etc. The second, a Colonial bungalow, cost $4,700, including house, lot, grading, etc. The third, called "Everyman's House," because it is within the reach of the average working man, cost only $3,800, including the house, lot, grading, insurance for one year, water, gas and sewer connections, and interest on the money during the construction. This price does not include any builder's profits. The price is what it cost the Chamber of Commerce. The rental charges for this

DEMONSTRATION HOUSE NO. 3—ATTLEBORO CHAMBER OF COMMERCE

The house is a story and a half, with two bedrooms and bath on the second floor, and dining-room, living-room and kitchen on the first floor

house, conservatively estimated, will be $27 per month. This includes interest on entire investment, taxes, and water.

In connection with the demonstration houses a Home Building Association was organized. Its purpose was to grant second mortgage loans at 6 per cent on new houses. If the prospective builder had 15 per cent of the entire cost of the house and lot, the Home Building Association would help to finance the balance. In three years, nineteen citizens were assisted by the Association. The homes, including lot, etc., have an aggregate value of $200,000. Many other homes have been erected through the stimulation and interest created. The directors of the Chamber feel that they have promoted a most notable and worthy community endeavor.

G. CORNELIUS BAKER,
Secretary, Attleboro Chamber of Commerce.

A Modern Municipal Garage

SCHENECTADY, N. Y.—Schenectady's new municipal garage, made possible by an appropriation of $100,000 by the Common Council, has been completed. It is located on Foster Avenue, and has accommodations for between 75 and 100 automobiles and trucks. The structure is one of the most modern in the state, with the two floors connected by a ramp. Three storage tanks, with a combined capacity of 21,000 gallons, have been installed so that the city will be able to buy its gasoline at wholesale rates. Two of the tanks, each holding 10,000 gallons, will be for storage only. The third tank, holding 1,000 gallons, will be filled through automatic pumps operating from the larger containers. It is expected that this system will save thousands of dollars annually.

GUY BARTLETT.

Bureau of Home Play Established

LOS ANGELES, CALIF.—The establishment of a Bureau of Home Play has been announced by the Department of Playground and Recreation of the city of Los Angeles. The objectives of this Bureau have been stated as follows:

1. To promote knowledge of the educational value of children's play activities and to encourage critical and intelligent selection of such activities for the child in the home.

2. To encourage provision of adequate space and facilities for the play of children in the home.

3. To encourage parental participation with children in play activities and supervision of children in play at home.

4. To discourage play on the public streets and other hazardous places.

The Bureau of Home Play will be essentially a promotive agency. Circulars will be published dealing with such subjects as the construction of a back-yard playground, suggested games for the home, musical and dramatic play in the home, suggestions for children's parties, etc. By means of personal conferences, group meetings, public addresses, enlistment of interest in the home play problem by other agencies, exhibits, radio talks and other methods, the Bureau will endeavor to contribute toward the accomplishment of the aims stated. Miss Pauline Storer is the Director in charge of the Bureau.

Municipal playground and recreation departments have heretofore been concerned largely with the establishment of neighborhood play centers as a cooperative community endeavor to provide the means whereby children might engage in the forms of play essential to their growth and development. High property values, which result in placing a premium upon the use of land, congestion in residential neighborhoods, crowded homes, disappearance of back yards, increased auto traffic on streets and highways, are factors which have tended to deprive children of opportunities to express themselves in and about the home as in years gone by. The community and neighborhood playground is society's answer to the problem.

The neighborhood playground, however, can be but a partial answer. Nothing can take the place of the home in the life of the child. Responsibility for directing the play of children cannot be entirely delegated to a community-employed play leader. Community playgrounds cannot be so generously provided as to be convenient for all children. The most generous provision would still leave the younger child, whose convenience is the convenience of a parent, a nurse or older sister or brother, unprovided for. The home should always be the child's playground, the parent the child's play leader.

There is no thought of governmental paternalism in this move of the Playground and Recreation Department. Indeed, in the establishment of this work the Department is seeking to put more of the responsibility on the individual parent, where it belongs. There has been too great a tendency to shift responsibility from the parent and the home to the community. This is apparent in health, education, public safety, recreation and other fields. This trend has been inevitable, although specialists in the various fields of social work have recognized the unfavorable consequences of the trend. The task of the Bureau of Home Play is not to do the work of the home but to aid the home in doing what rightfully it should do.

GEORGE HJELTE,
Superintendent of Playground and Recreation.

Emergency Water-Supply Provides Paradise of Scenic Beauty and Outdoor Play

WILMINGTON, N. C.—Greenfield Lake is an attractive example of what a city may accomplish in the beautification of a water-supply (held in reserve against possible future emergency) and its transformation into a municipal recreation center. The lake, a bluish-black stretch of 148 acres, is located at the southern edge of Wilmington and stretches for more than a mile along the scenic highway leading to the lower ocean beaches.

The picturesque smoothness of the water reflects informal avenues of great

THE NEW MUNICIPAL GARAGE AT SCHENECTADY, N. Y.

SWIMMING AND BOATING ARE POPULAR ON GREENFIELD LAKE, WILMINGTON, N. C., WHERE CYPRESS TREES GROWING OUT OF THE WATER PROVIDE GRATEFUL SHADE ON HOT DAYS

PLAYGROUND EQUIPMENT WHICH IS REGULARLY USED BY THOUSANDS OF CHILDREN AT GREENFIELD LAKE, WAS MADE POSSIBLE BY THE USE OF FUNDS SAVED WHEN THE CITY'S DAY-LABOR STREET "GANGS" WERE PRESSED INTO SERVICE ON PARK CONSTRUCTION

cypress hummocks. Skirting the lake is a 13-acre strip densely wooded with oaks, chinaberry trees, cypresses, and other trees native to the soil, except where clearings have been made for formal flower gardens, fountains, waterfalls, or groups of playing equipment. The deep shade of the trees where they fringe the lake, meeting and overlapping the shadows of cypresses which grow in profusion from the water, create a peculiar beauty of coloring arresting at any time of day but becoming just before dark a dream of beauty calculated to bring even to the spirit of the dullard a sense of wonder and charm.

Wilmington's practical-minded Park Commissioner, James E. L. Wade, believed it all very well to create such a beauty-spot, but, with the complete cooperation of Mayor Walter H. Blair and Commmissioner Joseph E. Thompson, he has installed playground equipment as well, providing for thousands of children. There are boats, too, a zoo, an aquarium, and a great pavilion for band concerts, dancing, or even conventions.

The park was purchased in 1925, at a cost of $25,000 to the city, and additional appropriations have totaled $5,600. Even the "stingiest" taxpayer of the city freely admits that the park is now easily worth ten times the total spent. People throughout the section, in fact, have begun to take a prideful proprietorship in Greenfield Lake.

The purchase of the lake averted a race crisis. When, in 1925, it came into the market as a private amusement pavilion, the opportunity to purchase was seized by negroes—a state of affairs which would have created consternation in any city considering that the location was in the immediate vicinity of Sunset Park and other more than ordinarily select residence sections. In 200-year-old Wilmington, where race segregation has been strictly observed, it threatened immediate disaster. Then along came the Commissioners with their happy inspiration to take over the magnificent property to be held for all time against the possibility of a drought such as threatened Wilmington a century ago, and incidentally to provide a paradise of scenic beauty and of play possibilities. And the results have been as above described. "Some time, not far distant," Mayor Blair declares, "Greenfield Lake will rival in fame the Magnolia Gardens on the Ashley, at Charleston."

R. H. FISHER.

Revised Water Rates Pay for Plant Improvement in Four Years

WATERTOWN, N. Y.—In the course of construction of a power dam for a municipal hydro-electric plant, the intake to the city water plant was permanently buried and there were other circumstances which made it advisable to construct a new intake and dam for the water plant. This was done at a cost of approximately $40,000, for which temporary certificates of indebtedness were issued.

To meet these certificates, the City Council adopted a new schedule of water rates, effective July 1, 1927, designed to raise the entire capital construction cost in one year's payment of water rent.

Prior to that date the rate schedule, in effect for many years, began at 15 cents per 100 cubic foot for the smallest consumption and was gradually reduced to 5 cents per 100 cubic feet for consumers using 28,500 cubic feet or more per month. These rates applied to the entire consumption and not merely to the excess over the amounts called for by higher-rate groups in the schedule. That is, a consumer of 29,000 cubic feet per month paid 5 cents per 100 for all of it, not 15 cents per 100 for the first quantity, then 14 cents, etc., and 5 cents for the rest. Between the various items of this sliding scale there were quantities of water for which lump sums were charged. There were no service charges or other payments than the water consumption rate schedule called for.

The rate schedule effective on July 1, made the following changes:

1. The water consumption rates were changed from the 15-5 cents per 100 cubic feet to a sliding scale beginning at 10 cents and going to 7 cents as a minimum.

2. The quantity of water consumed to earn lower rates was vastly increased, the 7 cents minimum applying only to the excess over 330,300 cubic feet per month instead of the 28,500 cubic feet required by the old schedule for the 5-cent rate. A great many of the consumers using from 30,000 to 300,000 cubic feet thus fell into the 8-cent group of the new scale, resulting in a straight increase of 60 per cent in rates.

3. The new rates applied only to the excesses over quantities called for by the preceding rate groups of the schedule, instead of applying to the entire quantity of water consumed.

4. Concerns having several meters were formerly allowed to add meter readings, but under the new rates each meter was billed separately,

forcing the consumer into higher-rate groups.

5. A meter service charge was established ranging from 25 cents per month for a ⅝-inch domestic meter to $7.50 for a 4-inch meter, $15 for a 6-inch, etc.

6. A charge was established for fire service connections, metered or unmetered, the rate being the same as the meter service charge on consumption above mentioned.

7. A tax of 5 cents per front foot on vacant lots was established.

While this schedule was heralded as a benefit to the small domestic consumer, many paid the same amount, others would experience a small increase, and to some there would be a small decrease, due to the reduction in rate offsetting the added meter charge. For the larger consumers of water, however, all of the seven changes mentioned meant larger bills. While the rate itself, when charted in graphic form by the city officials, did not look like a tremendous increase, the money payments to cover all the changes in the schedule advanced in at least one case over 254 per cent, and increases of approximately 100 per cent were numerous. The effect, and apparently the entire purpose, of the new ordinance was to take this entire $40,000 capital charge out of less than 100 consumers on a single year's water consumption.

As the result of many protests, the President of the Chamber of Commerce called a meeting of the Chamber. A committee was appointed, which met with the City Council in a friendly manner sterilizing equipment, long closed construction item spread over a longer period, expressing a willingness on the part of the business interests to meet the entire burden without increasing domestic water rates, but asking for charges by instalments.

An agreement was reached whereby a new water ordinance was adopted, effective October 5, under which bills for September were prepared and mailed. This ordinance confines the frontage tax to streets having water mains 6 inches or larger, thus excluding much of the older sections of the city. It reduces the meter and fire-service charges one-third, excepting for domestic meters, and establishes a water consumption rate on a sliding scale from 9 cents per 100 cubic feet to 5 cents per 100 cubic feet with a consumption of 33,300 cubic feet per month to earn the minimum rate instead of 330,300 cubic feet.

The new rates are higher than those of last year, as was to be expected; but under the new schedule the construction charge which started the difficulties will be met in about four years, and the revision has been accepted with general satisfaction.

CLARENCE C. SMITH.

Paper Gowns for Visiting Nurses

MILWAUKEE, WIS.—Dr. E. V. Brumbaugh, Deputy Health Commissioner of Milwaukee, has worked out a new idea in nurses' gowns—gowns made of crepe paper! The manufacture of the gowns requires the services of a seamstress to supply the seventy visiting nurses of the Milwaukee Health Department with enough paper gowns.

THE PAPER GOWN WORN BY THE VISITING NURSES OF THE MILWAUKEE HEALTH DEPARTMENT

Until a year and a half ago, the nurses wore the usual cloth gowns at homes in which there was a communicable disease. Dr. Brumbaugh had long felt that those gowns, which were left to others to sterilize and were washed by laundries, were unsatisfactory. A careful inquiry revealed that there were no ready-made paper gowns which exactly suited the purpose. He confided his paper-gown idea to one of the nurses and she suggested that the gowns be made within the Department.

She bought a pattern for a nurse's gown from a local department store and a roll of crepe tissue paper. A sample gown was made. Tests proved that it would stand up under 18 or 20 tryings-on. The nurses who tried the gowns out in their work, found them far more satisfactory than the cloth gowns. The tests resulted in the employment of a seamstress. She uses a pattern which was cut with a jig-saw out of compo board. This heavy pattern allows her to cut with scissors a dozen layers of crepe tissue paper at once which enables her to turn out 66 gowns a week—all of them complete with tape to fasten.

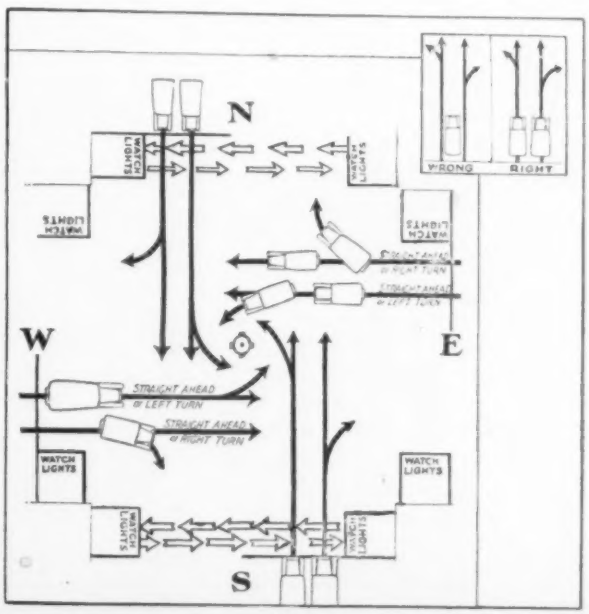
"The gowns cost us approximately 50 cents apiece," said Dr. Brumbaugh. "This will mean a slightly higher cost per year than for cloth gowns, but the paper gown is far more satisfactory for the visiting nurse, who must call at homes where there are contagious diseases such as scarlet fever, diptheria, smallpox, infantile paralysis, etc. The nurses carry the paper gowns in sterile bags—the ordinary grocery-store variety of bag. A different gown is used in every home having a communicable disease. The gown is saved for each successive visit to the home. After it has been worn, it is folded up and placed in the bag. When the nurse no longer calls at that home it is burned."

The paper used is the Jumbo roll put out by the Dennison Paper Co. This is 40 inches wide and 2,000 feet long.

P. W. KOEPPEN.

Traffic Speeded at Intersections

SALT LAKE CITY, UTAH.—The present system of regulating traffic at the intersections throughout the business district of this city, has speeded traffic at these points materially without increasing accidents. The main object of this plan, as indicated in the accompanying diagram, is to provide for double lanes of travel in all directions. Our streets having a width of 100 feet from curb to curb allow ample room for handling traffic in this way.



PLAN FOR PROVIDING DOUBLE LANES OF TRAFFIC IN ALL DIRECTIONS IN THE BUSINESS SECTION OF SALT LAKE CITY

If autoists follow the yellow pavement markings correctly, traffic can pass an intersection at nearly twice the usual speed. It is emphasized that automobiles must straddle the lines and not run alongside them; otherwise the double lines cannot be successfully handled. The long arrows which swing to the right or to the left mark the correct paths for turning vehicles. Motorists intending to turn to the right at an intersection are instructed to keep to the right-hand line. Those planning to drive straight ahead may use either line.

We are now putting over two street cars at the business district intersections at the same time, which helps to relieve the congestion of street cars. In other words, the first two cars at an intersection load and un-

load together, and then both go across the intersection when the green light shows up.

The squares at each corner marked "Watch Lights" on the accompanying diagram are the safety zones in which pedestrians are requested to stand while waiting for the signal which will give them protection when crossing the street.

JOSEPH E. BURBIDGE,
Chief of Police.

EDITORIAL NOTE.—Most cities desiring to control traffic by means of pavement markings will be better served by designating district traffic lanes *between* which the autoist may drive, than by marking single lines which the autoist is expected to straddle, for while many drivers will straddle the line quite accurately, some will drive their cars considerably off center. As mentioned in the foregoing item, the downtown streets of Salt Lake City have roadways 100 feet wide and the straddling plan is apparently giving excellent satisfaction there; but in cities having narrow streets and needing to conserve every foot of street width, it is believed that the straddling plan would not work out as successfully as would individual lanes.

New Tear-Gas Development Makes Effective Protection Against Jail Deliveries

PITTSBURGH, PA.—The development of high-powered tear-gas guns, such as we have recently installed in the entrance to the Allegheny County jail, brings a new advance in the safety of penal institutions.

We have always endeavored to keep abreast of the times and to be prepared to meet any surprise that might be attempted by the prisoners. Our jail is located directly across the street from both the police and the county detective headquarters, which were connected by an alarm, and we believed we had more than average security. Last October, however, Paul Jaworski and John Vasbinder made a spectacular escape by shooting their way out of the prison, wounding two guards and making their escape. These men were waiting sentence of death for murder in a series of payroll robberies.

After making thorough tests of this gas equipment in our jail yard, we were convinced of its instant and powerful effect. We have used Federal hand grenades in our Department for the last four years and have found them to be an indispensable part of our equipment. They have proved their value on more than one occasion to rout barricaded individuals.

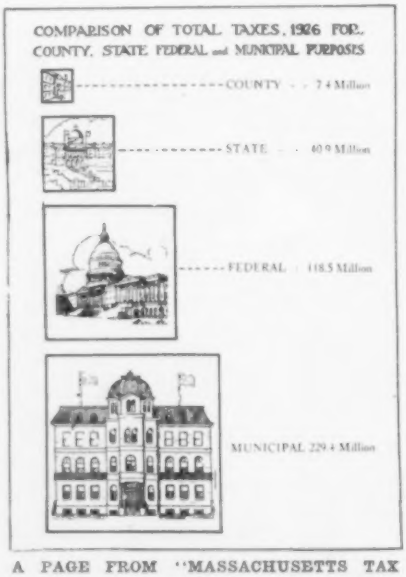
To prevent any attempts at deliveries or riots, we therefore had eight Federal gas guns built into our entrance way. These guns are electrically controlled and operated from a number of control stations located within easy reach of the employees. Any one control sets off the entire battery of guns, which discharge the gas in four-tenths of a second. It would be impossible for an individual to go through the high concentration of gas thrown in this entrance, for some time. When the gas is released, an alarm is sounded in the city Police Headquarters. The entrance can be covered by police from three different sources, all within less than a minutes' time. The doors of this institution have the double locking system. It requires four doors to be opened, using two different guards, in order that a prisoner may get out of the jail. With the addition of the tear-gas guns, we believe this institution has successfully met the problem of preventing jail deliveries. The equipment, manufactured by the Federal Laboratories, Inc., of Pittsburgh, is approved by the Underwriters' Laboratories and is similar to that successfully installed in hundreds of banks and pay offices.

Each guard is now equipped with a tear-gas billy, which has the appearance of the blackjack, but contains a tear-gas cartridge. This enables one man to handle and overcome a dozen unruly prisoners. We do not believe a prison guard should carry a pistol and we have adopted the Federal gas billy in place of a revolver, for the reason that the gas from the weapon is instantly effective, lasting for ten or fifteen minutes, but is not deadly. It is as quick-acting as a revolver, but should it be stolen from a guard while in the prison, convicts are unable to shoot their way out as they would by using a revolver. A guard is always in a position to quell a prisoner or group of prisoners without unnecessary brutality.

ROBERT BRAUN,
Sheriff of Allegheny County.

Boston Chamber's Annual Publication on Tax Laws

BOSTON, MASS.—Every one has an opinion on public finance and taxation, but few people know a great deal about it. That lack of knowledge, however, is excusable, for the complexities of public accounting and the redundancy of taxation



A PAGE FROM "MASSACHUSETTS TAX LAWS"

laws are confusing even to the best-informed.

To create a better understanding and to reduce the facts and laws to as simple terms as possible, the Committee on Taxation of the Boston Chamber of Commerce has for four years issued an annual publication entitled "The Massachusetts Tax Laws." It is described on the title page as "The sources and disposition of the public revenues, with tables showing the increase in taxation in the last twelve years." The 1927 edition has just been released.

This booklet is distributed to Chamber members, banks, public officials, libraries, universities and business organizations without charge, but to others a small charge is made to cover the cost of printing. Each law imposing a tax is described briefly, but with references to the laws for those who desire the exact wording. Methods by which the taxes are appropriated and expended and other important financial operations of the state, counties and cities and towns are described briefly. Statistical tables and charts show the amounts obtained by the operation of the laws and the trend over a period of years.

With each publication, the interest and demand have shown a gratifying increase. Lawyers, accountants and banks whose business it is to interpret the laws, find it a handy reference, while the descriptions of laws and the statements and tables showing the working and results of these laws give laymen a much needed fundamental knowledge.

State officials have given the committee splendid cooperation in supplying the necessary data, some of it being from original sources that are not included in their printed reports.

ELLERTON J. BREHAUT,
Manager Civic Bureau, Boston Chamber of Commerce.

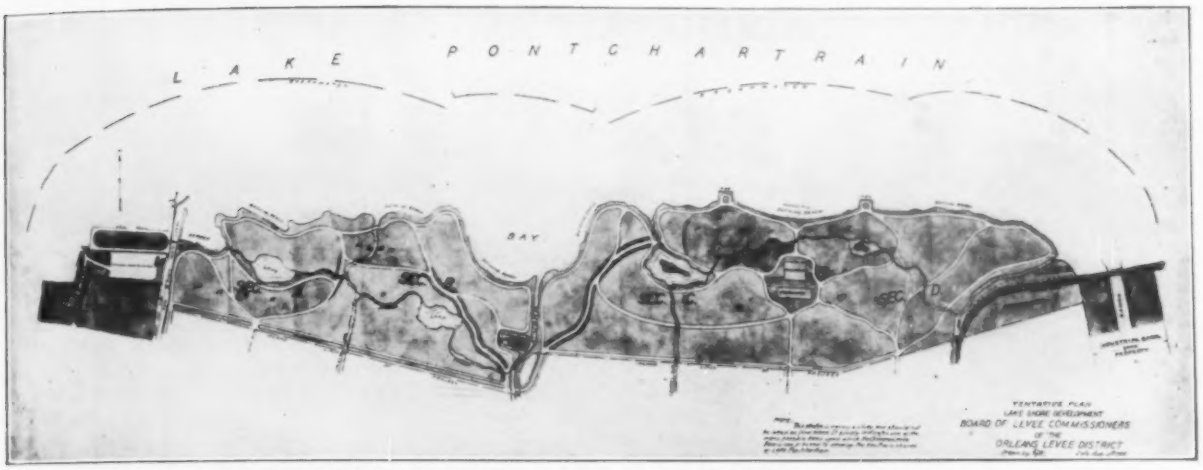
Lake-Shore Parkways and a Five-Mile Bathing Beach Under Development

NEW ORLEANS, LA.—Throughout recent decades of the 208 years of its career, New Orleans has been somewhat in the position of having "water, water everywhere but not a drop to"—swim in.

The romantic metropolis of the South has all kinds of waterways around it—lakes, lagoons, bayous, rivers, bays and canals, but until very recently it has been without lake-front residential property or bathing beach. The reason was that the shores of the waterways were all lined with industries, wharves or swamps. Today, however, thanks to the ingenuity of the engineers of the Orleans Parish Levee Board, New Orleans is about to realize the dream of many generations—extensive and conveniently located lake-front residential parkways and a five-mile bathing beach. This lakeshore development is expected to cost $27,000,000 and will entail the creation of 2,000 acres of beach-front property from the bottom of Lake Pontchartrain.

Already the Reynolds Dredging Co., which was given the initial contract for pumping fifteen million cubic yards of filling, has completed its work to such an extent that during October last thousands frequented the emerging beaches. The entire project is to be interlaced with artificial bayous and lagoons and curving driveways, and planted with the infinite variety of semi-tropical foliage characteristic of Louisiana.

The entire beach will be protected by a breakwater constructed of chain piling. The beginning of the project is financed by a bond issue of $2,500,000, and the balance will be raised through the sale of the lands thus created.


L A K E
P O N T C H A R T R A I N
BAY
TENTATIVE PLAN
LAKE SHORE DEVELOPMENT
BOARD OF LEVEE COMMISSIONERS
OF THE
ORLEANS LEVEE DISTRICT

TENTATIVE PLAN FOR DEVELOPMENT OF SOUTHERN SHORE OF LAKE PONTCHARTRAIN, NEW ORLEANS

The real estate phases of the activity are to be undertaken by a special board to be created by the state. At present the authorities in charge of the project are discussing an interesting point in connection with the whole plan—whether the entire water frontage will be reserved for public parkways or whether any part of it will be sold to resort hotel operators, several of whom already have requested reservations in the event that they can get actual water frontage.

H. VAN R. CHASE.
General Manager, New Orleans Association of Commerce.

Oklahoma City Votes 10¼ Millions to Be Spent on Public Improvements

OKLAHOMA CITY, OKLA.—It is unusual for a city of 155,000 inhabitants to vote bond issues totaling over 10¼ million dollars for public improvements at one time. When Oklahoma City did this, on November 29, 1927, however—the actual amount authorized by vote being $10,329,000—the action seemed to have complete justification in the city's steady, substantial growth.

There were eleven items in the issue, each carrying by an overwhelming majority—in most cases about 8 to 1—and thus giving concrete expression of the city's sentiment towards permanent future development. The items include:

$900,000 for increasing water-supplies, including the building of an additional conduit from the city reservoir; and $100,000 for the extension of water-mains into new residential sections.

$4,000,000 for the acquisition of railroad properties and rights-of-way through the center of the city, the land to be used for a civic center.

$525,000 for bridge and river improvement systems; and an additional $25,000 for a flood-control survey of the North Canadian River.

$70,000 for fire-stations and fire-fighting equipment; and $50,000 for traffic control and traffic safety equipment and its installation.

$250,000 for construction and extension of sanitary mains and outfall sewers and $2,424,000 for the construction, extension and improvement of the storm-sewer system.

$285,000 for the opening of North Broadway and owning, maintaining, and beautifying three blocks in Dale Addition for public purposes.

$1,700,000 for the building budget for city schools.

Each item in the bond issue as recommended by the city government was passed by a committee of the Chamber of Commerce. In case of the railroad proposition, this amount was arrived at after many months' negotiations with the owners by a citizens' committee appointed by the city government, which had previously pledged the support of every civic organization of the city to whatever solution might be adopted for the problem. The city had been negotiating for a settlement of the matter for some fifteen or twenty years.

Prior to the election, a group of leading citizens was called together by the Chamber of Commerce at a meeting at which it was agreed that $10,000 was needed to put the campaign over. A sum of $12,000 was raised. Only $7,500 was required, however, and each contributor had returned to him 32 per cent of his contribution. The campaign was directed by the Chamber of Commerce.

Many kinds of publicity were used. Newspapers assigned reporters to cover the campaign exclusively. Page advertisements were used daily in the papers. Streamers were stretched across the streets. Window cards and curb signs were used; even the back-door approach was used, campaign literature being sent into the homes of the city in laundry bundles. Batteries of telephones were installed, and 30,000 calls were made from the Chamber of Commerce during the week preceding election. Speakers' committees covered all public assemblages for ten days; and the Saturday night before election a great mass meeting attended by thousands stirred enthusiasm to a high pitch. An interesting psychological appeal was introduced into the campaign by the staging of this mass meeting on vacant lots owned by the railroad, and in the heart of the city. The passing of freight trains breaking into the program, greatly increased enthusiasm for the track removal.

Already results from the election were beginning to be felt in terms of growth. Corporations and individuals who had been holding back because of the uncertainty of the railroad situation, are beginning definite plans for spending millions on new industrial and business enterprises.

STANLEY C. DRAPER.
Manager, Oklahoma City Chamber of Commerce.

Would License Every Fuel Burner As Smoke-Abatement Measure

EVERY householder in New York City may be faced in the immediate future with the necessity of taking out a license on his furnace. Householders are included with apartment house and factory operators, owners of tugboats and other harbor craft, and owners of railroads within the city limits, as contributors to the smoke nuisance which is being drastically dealt with by health officials and others.

At a meeting at the Department of Health headquarters on December 12, 1927, representatives of 150 medical, engineering, maritime, business, civic, and trade bodies, adopted resolutions whereby every fuel burner in the city should be included in the smoke-control license plan. No legislation by the Municipal Assembly is required for such action, according to Dr. Louis I. Harris, Health Commissioner, an ordinance allowing charging of fees being already in operation. After one more meeting, the whole proposition, including the licensing and the creation of a Smoke Abatement Division, will be submitted by Dr. Harris to the Board of Estimate and Apportionment, and to Mayor Walker for his approval.

Under the plan now being considered, all industrial plants and other users of soft coal or oil will be forced to submit specifications and plans for their respective furnaces, which would be passed upon by the Smoke Abatement Division's inspectors and engineers. Users of hard coal—and this includes a majority of householders—would be licensed just as users of soft coal. The fee charged to householders would be small—possibly fifty cents each—with a mounting scale for industrial concerns, harbor craft and owners of apartment houses and factories, admittedly the chief offenders when smoke and soot are considered.

The need for a campaign such as Dr. Harris has inaugurated is evident from studies by the United States Public Health Service, which show losses as high as 42 per cent of daylight at 8 a.m. and 18 per cent at noon, on sunny days, from the city's constant smoke pall. On foggy days the loss is much greater.

Sewage Treatment Works at Holland, Michigan

By PAUL HANSEN and K. V. HILL
PEARSE, GREELEY AND HANSEN, HYDRAULIC AND SANITARY ENGINEERS, CHICAGO, ILL.

GENERAL VIEW OF PUMPING-STATION

HOLLAND, MICH., is a city of approximately 14,000 people, located in the central portion of the southerly peninsula of Michigan, at the easterly end of Black Lake, an estuary of Black River tributary to Lake Michigan. Black Lake is approximately 5 miles long, and has an average width of about ½-mile. The normal dry-weather stream-flow of Black River is about 165 cubic feet per second. At this rate of flow the retention period in Black Lake is approximately 12 days. The easterly end of Black Lake is very shallow, while the westerly end is quite deep, the maximum depth being 58 feet. Both shores of the lake below Holland are extensively used for recreational purposes.

The upper end of the lake is grossly polluted by tannery wastes and city sewage. From October to December the pollution is greatly augmented from wastes from a large beet-sugar works. Additional pollution is caused by a canning factory and a malt vinegar and pickle plant. The upper fourth of the lake, on an area basis, is so badly polluted as to constitute a nuisance to both sight and smell. The next fourth of the lake shows evidence of pollution during the summer season by an excessive growth of chlorophyl-bearing organisms. These organisms are at times so numerous as to form deposits on the beaches resembling green paint, and they completely cover the water surface close to shore when there is an inshore breeze. The lower half of the lake is surprisingly free from pollution, even such as can be detected by bacterial methods. The central portion of the lower half of the lake is almost free from colon bacilli, and bacterial counts are low.

GENERAL VIEW OF IMHOFF TANKS AND PUMPING-STATION

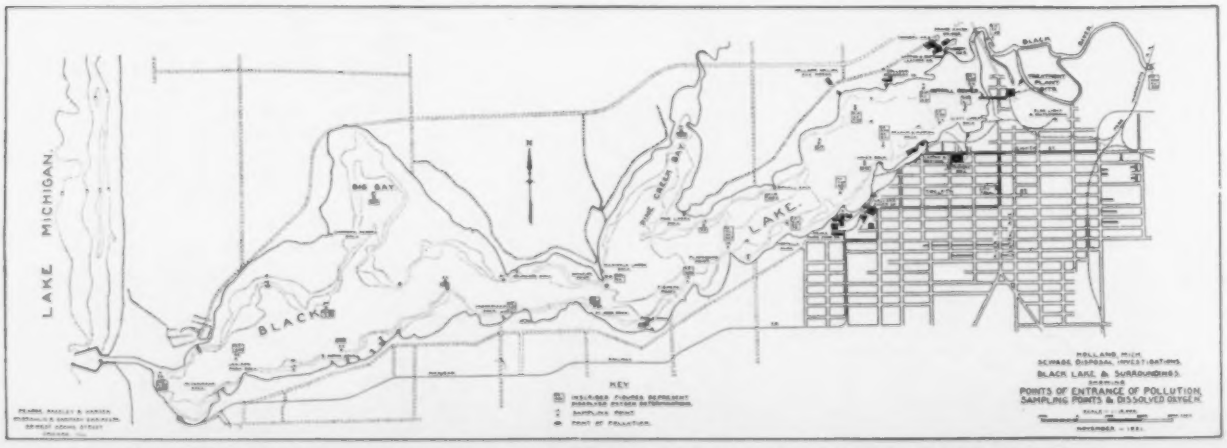
In view of the summer resort character of Holland and its surroundings, the city authorities of Holland felt that the pollution of the upper lake should be stopped. They did not feel, however, that the industries could be called upon to eliminate their pollution until the city had done its share. Moreover, the authorities recognized the greater danger, to bathers, of domestic sewage as compared with industrial wastes, though the tannery wastes also represent an element of danger, especially in that they may contain anthrax bacilli.

The locations available for a treatment plant are limited, and as a result of objections of one sort or another to the use of various possible sites, it was found necessary to locate the plant as shown in the map on this page, very near a main north-and-south highway, and in close proximity to habitations and industrial buildings. It therefore became important to design and operate the plant in a manner that would cause a minimum of odor.

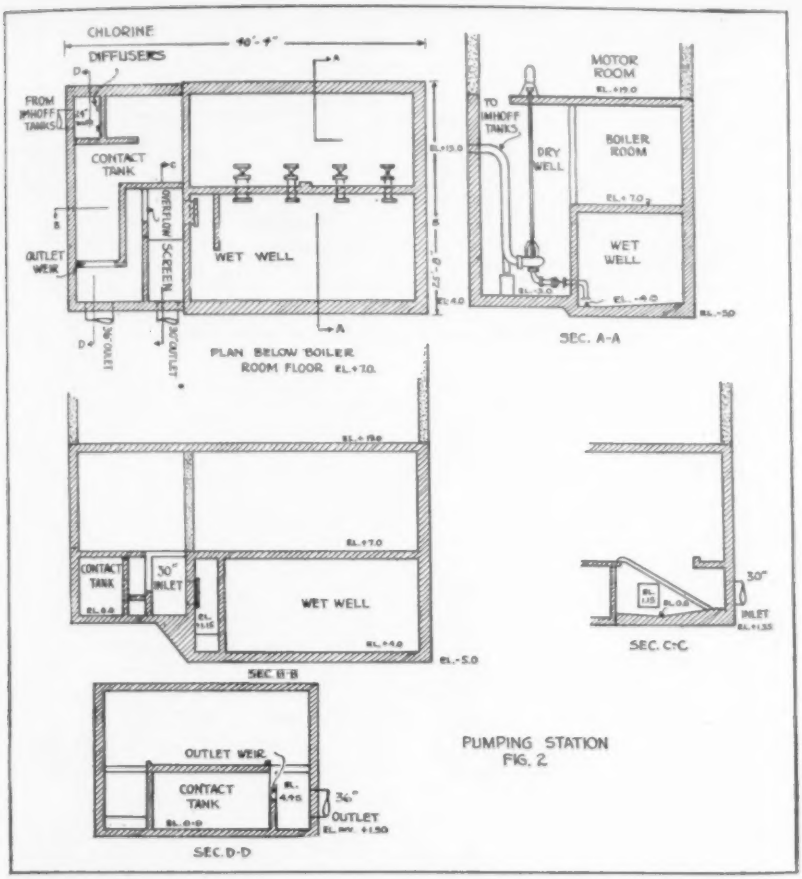
The Plan of Treatment

The treatment determined upon comprises Imhoff tanks with appurtenances, and chlorination, the latter being applied during the summer season only. While this treatment will not yield a non-putrescible effluent, it is believed that in the absence of other pollution and with good dispersion of the clarified effluent in the upper end of the lake, there will not result visible nuisance or bad odors. Later, however, more complete purification, such as is effected by trickling filters, may be necessary, and the Imhoff tanks have been so arranged and have been placed at such an elevation as to permit a gravity flow through trickling filters if and when they are installed.

SLUDGE BEDS



MAP OF BLACK LAKE, HOLLAND, MICH., SHOWING LOCATION OF PRINCIPAL SOURCES OF POLLUTION



PUMPING STATION
FIG. 2

SECTIONS THROUGH PUMPING-STATION OF HOLLAND, MICH., SEWAGE TREATMENT PLANT

The point of discharge of the effluent into Black Lake is fully a mile distant from any point at which there is bathing. It is therefore impossible for any visible evidence of sewage to reach any bathing places, while sterilization of the effluent with liquid chlorine will be adequate protection to the health of bathers. Another reason for not installing filters at the present time is that the effluent would be unnecessarily better in quality than the water in the upper end of Black Lake as now contaminated by wastes from the tannery and other sources. Pollution from the beet-sugar factory causes relatively little trouble, inasmuch as such pollution occurs during cold weather and following the resort season. Actual investigation indicates that with the limited treatment of beet-sugar wastes now applied, they do not deplete the oxygen at any point in the lake, even when the lake is covered with ice.

It was found impracticable to obtain a gravity flow through the Imhoff tanks, and accordingly all of the sewage must be pumped. For this purpose a pumping-station was erected. This station comprises screen chamber, venturi meter, electrically driven centrifugal pumps with vertical shafts, chlorine contact tank and chlorinator. There is also located in the pumping-station a small laboratory and office. On this page are shown several cross-sections of the pumping-station.

There is nothing especially novel about the pumping-station, but it represents a rather compact, accessible, and complete installation.

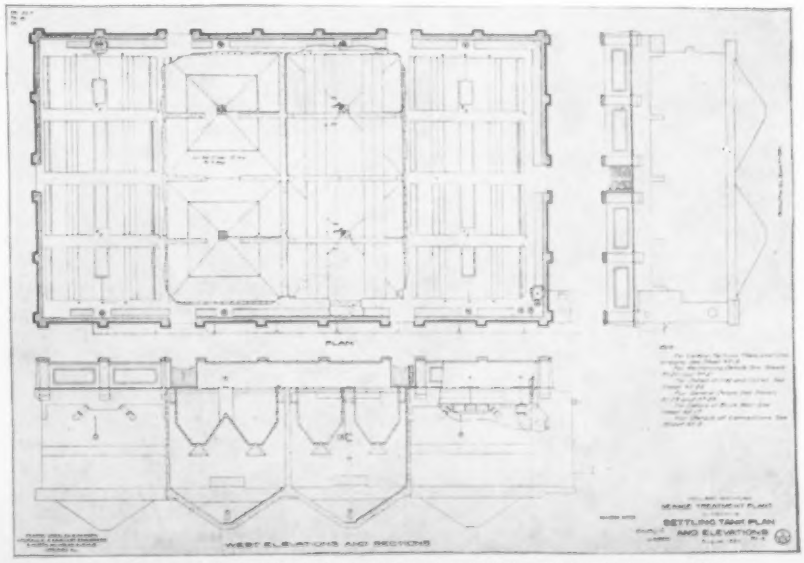
Although the sewers of Holland are on the separate plan, the sewage from the sanitary sewers contains a good deal of grit, in part due to the in-leakage of fine sand through imperfect joints in the sewers, and in part due to sandy material from unpaved streets entering perforations in manholes. The volume of this grit is so great that as an afterthought it was deemed necessary to install a small grit chamber. This grit chamber is arranged with stop planks so that the velocity through it may be adjusted for depositing the sand while maintaining the organic matter in suspension.

The Imhoff tanks are of relatively standardized design based on a population of 22,500 anticipated in 1936, with an average flow of 100 gallons per capita. On this basis the retention period in the sedimentation compartments is 3 hours and the sludge digestion capacity is 2.6 cubic feet per capita.

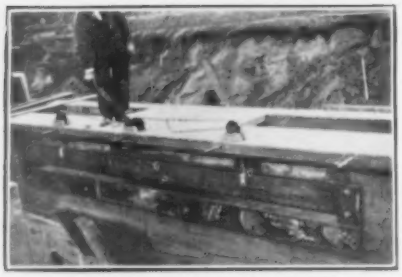
In so small a plant it was not deemed necessary to provide duplicate inlet and outlet channels for reversing the flow. It is recognized that some deposit may take place in the channels which may be used either as inlet or outlet channels, but this may be overcome by brooming down the channels once a day. The inlet valves of special design are so arranged that all the solids may be forced into the tank with little difficulty. Reversal of flow is effected by closing the inlet weirs by means of a specially designed gate, which in practice works very smoothly and satisfactorily. Corresponding manipulations of the special inlet valves is also necessary.

The sludge beds have an area of 0.72 square feet per capita and are uncovered.

The original plans called for a brick wall of an ornamental type around the Imhoff tanks and a greenhouse over the sludge beds, all with a view to improving the appearance of the plant and preventing odors from spreading about the



LAYOUT OF SETTLING-TANKS AT HOLLAND SEWAGE TREATMENT PLANT



CONTROL OF GATE AT SLOT

neighborhood. Owing to limitation of funds, it was impossible to include these items in the first installation, but they may be added at a later date. The Park Commission of the city has taken over the grounds around the treatment works and they are to be artistically planted and carefully maintained. The growth of lawns and planting has not advanced far enough when this article was prepared to secure satisfactory photographs showing the landscaping.

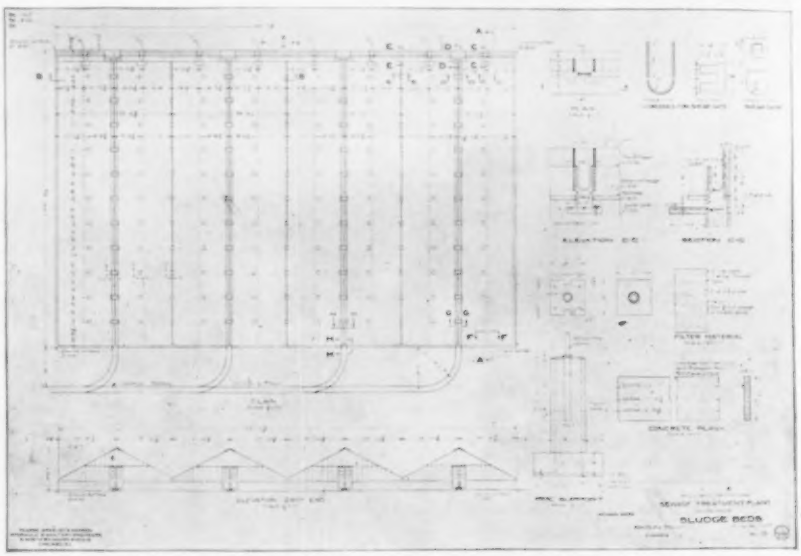
The plant has been in operation for ten months. The effluent from the sedimentation tanks is fresh and has very little odor. The only perceptible odor about the plant is observed at the pumping-station, just in front of the exhaust fan from the screen chamber. Up to date there have been no complaints whatever among the surrounding residents with reference to odors from the plant.

The cost of the installation was as follows:

Pumping-station and equipment	33,040.00
Tanks, sludge beds and appurtenances	87,885.42
Total	$190,443.17
Total per capita cost of treatment works on basis of design population	$8.46

The treatment works were built by the Hay-Weaver Construction Co., of South Bend, Ind. Pumping equipment was furnished by the American Well Works. The chlorinator was furnished by the Wallace & Tiernan Co. The work was designed by and construction was supervised throughout by Messrs. Pearse, Greeley and Hansen, hydraulic and sanitary engineers, of Chicago.

VIEW OF SAND CATCHER



LAYOUT OF SLUDGE BEDS AT THE HOLLAND SEWAGE TREATMENT PLANT

The Cincinnati Miracle As Seen Through Boston Eyes

An Editorial from the Boston Herald of November 24, 1927

IT never happened before. The Cincinnati Tammany had occasionally lost an election during the half-century preceding 1925, but it never had lost two elections consecutively. That now has happened. After many years an administration which is everlastingly opposed to the professional gangsters who so long had manipulated that great municipality for their own personal profit has been triumphantly re-elected. Four years ago the metropolis of southern Ohio, like the metropolis on Lake Erie, adopted the Hare system of election (proportional representation), with a city council of one chamber and a city manager chosen by the council. The Council came to the capital of the nation for its City Manager and brought Lt.-Col. Sherrill of the engineering corps of the army, who had been Superintendent of the Public Buildings and Grounds of the District of Columbia, to the Ohio city, and entrusted him with a huge job of renovation and reform.

It has been a hard fight throughout. Never for an instant did Rud Hynicka or Fred Schneller relinquish either their vigilance or their energy. Their chief charge against the "charter" council has been that it has spent more money than its predecessors and boosted the tax rate, both true. But the reply has been that the citizens were getting something visible for the money that used to disappear in mysterious manner. More in detail, the Mayor, who is elected under the new charter from nine members of the council, Murray Seasongood, a graduate of Harvard College and Law School, and Manager Sherrill, cite these accomplishments:

The revision of the street contracting system, which has resulted in a reduction for asphalt, brick paving, and re-cut granite of 22 per cent. For instance, what cost in 1925 at the rate of $3.35 per square yard, cost in 1926 and thereafter at the rate of $2.60 per square yard. The market prices for these materials in these years had not been decreased. For the single year, 1926, engineers calculated that this difference had saved the city $66,000. Then in the repairing of the city streets there was a saving in the cost of materials but there was also "twice as much work done in 1926 as in 1925." Further, in October, 1925, the entire wage scale in the street repair department had been considerably increased, yet with a much larger amount of work done, the payroll in 1926 was $11,000 less than in 1925. There are many items in the catalog that deserve attention, but we note here only that an old, run-down, unkempt City Hall has been entirely renovated, and that, most important of all, there has been a reawakening of civic pride amongst the citizenship.

Now the new plan is to operate for another four years. There were many earnest citizens who opposed candidly on principle the lodgment of such large powers in the single personality of the city manager; they also disliked the idea of the small council with members all chosen at large. Just before the recent election both sides were doubtful about the outcome. What now has happened both in Cleveland and in Cincinnati is of interest to the nation at large. Both cities are of the first class and it would seem that they afford excellent opportunity for the thorough trying out of the city manager scheme of government based on elections by proportional representation.

The Cash Value of Pure Water

By R. E. McDONNELL
CONSULTING ENGINEER, KANSAS CITY, MO.

INVESTMENTS are judged by their financial returns. We continue to invest large sums of money, sometimes to secure better health, often to obtain some pleasure or happiness, and frequently to gain increased comfort in living; and, more often than for any other reason, our investments are purely business ones made to gain greater wealth. An investment in pure water will invariably bring good, safe returns on any basis one might use, whether it is health, happiness, comfort, or added income.

San Francisco has had under construction for ten years its pure mountain source of water from the high snow-capped Sierra Nevada Mountains. This project will cost over $300,000,000 before it is completed. This closed pipe line,—conduits, tunnels and under-bay crossing,—costing more than the Panama Canal, a task greater than the building of the Roman Aqueduct, is quietly going ahead as one city's investment for pure water.

Sacramento, with only 100,000 population,—and even though it has a modern filtration plant treating the Sacramento River water,—has under way a $12,000,000 program of bringing pure water from Silver Creek, a high mountain stream, fed by snows and located in a protected forest reserve. All of this investment, or about $120 per capita, is due to the demand for pure water.

Pure Water Helps a City Grow

Los Angeles attributes its remarkable growth, from the small scattered town to a city of one and one-quarter million, to its achievements in bringing Owens River water 300 miles over the mountains and deserts so that tourists seeking pleasure in an agreeable climate could also enjoy pure water.

This supply, now fast becoming inadequate for Los Angeles, is to be supplemented by the world's greatest engineering effort toward a water-supply—the bringing of the waters of the Colorado River across 300 miles of desert and mountainous country to Los Angeles. The water would be lifted 1,400 feet by power generated through the building of the world's highest dam across the Grand Canyon. This proposed Boulder Dam would be 600 feet high and, besides the generation of power, there would be stored behind the dam enough surplus water to irrigate tracts of land as large as the state of Missouri.

Per Capita Costs

Small towns as well as large cities have spent enormous sums for pure water. The cost per capita in some of these small places is greater than in the larger cities. Canon City, Colo., with only 6,000 population, spent $600,000 in bringing city water through the Royal Gorge. Flagstaff, Ariz., with only 4,000 people, spent $500,000, or $125 per capita, in piping pure mountain spring water 18 miles.

The 6,000 water plants in the United States have before them a difficult task in keeping 60,000,000 urban population supplied with pure water.

Chicago's Spring-Water Bill

Twelve million dollars is spent annually in Chicago alone for bottle water because it is believed to be pure. Train-loads of glass-lined sterilized tank cars carry this Wisconsin spring water to Chicago. Hundreds of trucks deliver the large glass bottles to homes and offices, yet only about one person in every one hundred, or one family in every twenty families, feel they can afford the luxury of this pure water. The known pollution of Lake Michigan and the discussion as to the advisability of filtration, increase the desire and sales for spring water.

Sanitary Standards Are Raised

The time was when water that was wet and would put out a fire was sufficiently satisfactory, but, with our knowledge of water-borne bacteria, we began to raise the standards, until now it is unsafe, unbusinesslike and unpopular to offer anybody a drink of water unless it is pure, clear, sparkling, and palatable.

After learning from the sad experiences of careless towns where disastrous typhoid epidemics occurred that about 65 per cent of all water-borne diseases were traceable to impure water-supplies, we began to appreciate the value of pure water. The loss of thousands of lives through water-borne diseases in Cincinnati, Pittsburgh, Philadelphia and other cities is now but a passing memory. It was not uncommon in the memory of many to hear of death-rates from typhoid of 100 or more per 100,000 population. Thirty years ago the average death-rate was 30 per 100,000 from typhoid, and now, through the use of pure water, we have but a loss of about 2 per 100,000, or only 20 deaths per million people from this once dreaded disease.

Pure water, pure food and good sanitation are fast making typhoid and other water-borne diseases things of the past, and it is a sad reflection upon the administrative officers of any community to tolerate such diseases. These are preventable and their occurrence indicates carelessness and neglect and a sufficient cause for arrest and conviction of a crime.

The Work of Local and National Health Boards

Every state now has its Department of Health, and with the United States Public Health Service representatives all working to maintain water of sufficient purity to meet the U. S. Treasury standards, aided by water superintendents, filter operators and engineers, the time is fast approaching when the city or a community with a questionable water-supply will be shunned by intelligent people and businesses. No city can afford to serve water of even doubtful purity—it is not good business. More harm and danger can arise from a city's dispensing impure water than could be caused by a meat market selling tainted or decayed meat. Water may be clear and sparkling, yet be laden with deadly bacteria, while bad meat can be readily detected by sight, taste or smell. So important to health is pure water, that a daily analysis should be made, not a weekly, monthly or quarterly test.

Responsibility for Impure Water

Courts have promptly recognized the responsibility for impure water, and thirteen decisions are on record wherein the defendant, the municipality or the water company has been held liable for sickness and death traceable to the use of an impure water-supply.

Courts have held that under the statute conferring the right to establish public water-works to supply water to the inhabitants of the city, there is an implied responsibility on city officials to furnish water in a pure and wholesome condition and to exercise reasonable care and inspection of the supply, that they may know at all times what the condition of the water may be. Decisions are on record wherein, evidence being submitted showing that the city was negligent in the proper maintenance of the supply, judgment was awarded to the plaintiff.

The number of cases decided against cities and water companies should serve as a warning to those selling water to inaugurate a constructive program of improvement and to institute a rigid inspection with frequent tests and thus avoid the possibility of causing lengthy and expensive litigations and costly judgments because of impure water.

Good Health Records Are Possible

In thirty years' time the mortality from typhoid has steadily declined with the increasing use of pure water. The filtered-water population in thirty years has increased from 6 per cent to 60 per cent. Death-rates have dropped from an average of 30 per 100,000 to 2 per 100,000, and several cities of 300,000 population and larger have the enviable records of not a single death from typhoid in the last year. This splendid achievement has been chiefly accomplished through investment of time and money in furnishing pure water to every user.

Purity a Question of Price

The water plant formerly had as its principal officers a chief engineer who kept the pumps running. Now a score of skilled operators are necessary. Filter operator, chemist, bacteriologist, accountant, financier, engineer, rate expert, appraisers, attorney and diplomats are all required to exercise the greatest skill and care in supplying pure water and then in getting paid an adequate rate for the pure water.

Pure water is possible in every community and it is just a question of price whether it is made available. Sometimes it may involve long, expensive gravity flow lines, impounding reservoirs, dams, purification works, artesian and gravel wall wells, elaborate treating plants, sterilizing equipment, long closed conduits, tunnels, aqueducts, and chemical laboratories.

Adequate Rates Necessary

These adjuncts toward pure water have greatly increased the cost of supplying water, until now there are hundreds of plants throughout the country that are striving to maintain the high standard of purity on a rate that is far too low for the increased order of purity and service.

The average rate of the municipal plants in one state shows that two tons of water under pressure is being furnished for 5 cents. Imagine any other commodity where the quality requirements are so exacting, where absolute purity is demanded, and where such a ridculously low price prevails. The price paid for water in hundreds of plants is far too low to provide for construction and operation and the maintenance of the increasingly high standards of pure water.

Pure water is worth whatever it may cost to secure. The city that has it, takes advantage of this accomplishment, knowing fully that future industrial growth is not possible in a community where the water-supply is inadequate or of doubtful purity.

Other Qualities Besides Purity Demanded

Purity of water alone is not enough, for now we are more discriminating. Our tastes have become educated and our standard of living raised. Water, in addition to being pure, must be soft, clear, sparkling, free from iron or minerals, and without odors or tastes.

The furnishing of water that meets all of our exacting requirements calls for the highest technical trained skill available, both in design and operation. The investment for this pure, sparkling, soft water is many times greater than it was a few years ago. With this increasingly high investment, there should be correspondingly increasing rates, and waterworks officials are not doing their full duty to the public by raising the standards of quality and neglecting the proper rates commensurate with the investment required for supplying the public with good, pure drinking water.

ACKNOWLEDGMENT.—From a paper read before the Missouri Conference on Water Purification.

Are City Expenditures Too High?

THE occasional accusation that American cities are engaged in an orgy of extravagant spending, and the advice that municipal expenditures should be pared to the bone because taxes have risen and bonded indebtedness increased, receives vigorous denial in an article with the above title by Frederick Uthoff, in *Philadelphia,* published by the Chamber of Commerce of that city. He states that with a few notable exceptions most of our cities may be proud of their economy in recent years. A host of new requirements are being met; the tremendous spread of the automobile alone has called for great improvements in streets and bridges and heavy expenditures for traffic control and pavement maintenance. The war years caused a rigorous cutting down of municipal improvements; we are now trying to catch up with delayed needs as well as to meet new ones. When the decreased purchasing power of the dollar is considered along with these facts, an average per capita expenditure of cities in 1925 of a little more than twice that of 1913 is not at all surprising, and the average for the intervening period, when expressed in terms of the 1913 dollar, is less than in 1913—this being also true of the per capita net debt of the cities. The article has been reprinted (see page 189).

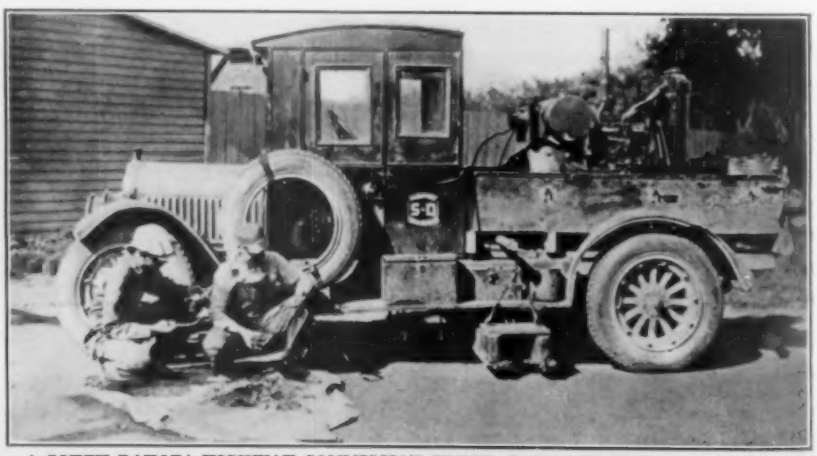
Fewer Highway Tacks

SOUTH DAKOTA roads are undergoing a clean-up by means of a truck and a few magnet coils, as a result of which motorists in that state presumably find their "flats" bills somewhat less.

The South Dakota State College, in cooperation with the Minneapolis Service Shop of the General Electric Co., recently mounted twelve magnet coils on a magnet suspended under a state highway truck. The truck is to be used for picking up nails and tacks on the highways of the state. The magnet is 16 inches wide by 7 feet long, and the coils are fitted on a core 2 x 7 x 14 inches. It was necessary to construct the device to withstand moisture, inasmuch as it might be used in wet weather.

The coils were built and installed. On a trial 3-mile run over a gravel highway just south of Brookings, S. Dak., the outfit picked up 36 pounds of potential grief for motorists, the lot including nails, tacks, screws, safety razor blades, fishhooks and iron particles.

The truck travels at 10 miles an hour and covers an 8-foot strip of roadway on one trip. The magnet has a length of 7 feet and also draws pieces of metal for a distance of about 6 inches from each end. The position of the magnet under the truck is adjustable. It is usually operated at a height of 4 inches above the ground. Power is supplied by a gasoline-engine-driven generator mounted on the truck.



A SOUTH DAKOTA HIGHWAY COMMISSION TRUCK, EQUIPPED WITH A MAGNET FOR REMOVING TACKS, NAILS AND OTHER SIMILAR SUBSTANCES FROM ROADS

MUNICIPAL ACCOUNTING AND FINANCE

Conducted by FRANCIS OAKEY, C. P. A.
Member of the Firm of Searle, Oakey & Miller, New York

Control of Expenditures

THE preparation of estimates by the departmental executive is the first step in the control of the city's expenditures; the last step is the signing of the warrant by the city auditor. Before this final step is taken, each item is subjected to a series of inquiries, namely:

1. Whether it comes within the scope of desirable or adopted policy.
2. Whether it is of sufficient relative importance to be made a part of the total which the city can afford.
3. Whether it is consistent with law.
4. Whether in class, type or grade it comes within the scope of the standards which prescribe the articles or services which may be procured.
5. Whether, when the article is delivered, it is in accordance with contract as to quantity and quality.
6. Whether the service rendered is satisfactory in volume and character.
7. Whether the price is according to agreement and the amount claimed accurately computed.

These inquiries are made by various officials or official bodies whose functions of control may be described as follows:

1. Departmental control
2. Administrative control
3. Legislative control
4. Control over the procurement of labor
5. Control over the procurement of material and contractual services
6. Auditing control

1. Departmental Control

This is by far the most important phase of control over expenditures. It is the foundation upon which the adminstrative control exercised by the mayor and his assisting budget director must, after all, rely to a great extent.

In the first place the departmental executive often is a powerful factor in the forming of policy. If he is a convincing advocate, well equipped in the technique of the work of his department, he has all the advantage in the attempt to obtain the approval of the mayor and the legislative body for a program of increased expenditure. Conversely, if he is lacking in these qualifications, the real needs of the services under his direction remain unknown or at least not fully appreciated.

Secondly, no methods have yet been devised for preventing the waste of appropriations by the departmental executive. Even though the administration is equipped with all the approved instruments of economy—the budget, central purchase, standardization of positions and salaries, audit, etc.—great waste may exist through the laxity of the departmental executive. The man in charge of the job is the only one who can exact the fulfillment of contracts, complete and satisfactory delivery, a day's work for a day's pay, and who can enforce safe custody of stores and due care of property.

Thirdly, the control over expenditures can be fully effective only when the departmental executive cooperates fully and positively with the officials who exercise central control. The results which are possible may be imagined when the departmental executive adopts the following methods:

1. Aids in widening the scope of central purchase in all cases in which the consolidation of orders and contracts will obtain lower prices.
2. Aids vigorously in standardizing the types and grades of articles of common use, and in eliminating the purchase of special articles to satisfy peculiar tastes or groundless preferences.
3. Conforms carefully to the standards set by the civil service commission governing the qualifications and salaries of employees.
4. Prepares his budget estimates honestly and accurately, and presents with them all the pertinent facts without exaggeration.
5. Conforms punctiliously to the requirements of the city auditor governing the preparation and submission of requisitions, orders, payrolls, etc.

2. Administrative Control

Effective management of finances of a city is founded on the formulation, adoption and execution of a definite program of expenditure and of financing. In fact, without a program there can be no management worthy of the name.

The formulation of the program is a continuous process. The estimates of the departmental head prepared annually for budget purposes are the result of conclusions reached during the year in the light of practical experience. These estimates must be reviewed by the chief executive and by him modified, if necessary, to make them a part of a comprehensive program for the city as a whole.

Under the most effective form of organization the chief executive is assisted by a budget officer, whose main duties relating to the annual estimates are as follows:

1. To prescribe standard forms for the preparation of estimates.
2. To review the estimates submitted by each departmental head to determine the reasons for all increases and decreases.
3. To ascertain that all the facts supporting these reasons are presented.
4. To eliminate all items of expenditure which are not proved by the departmental head as necessary.
5. To determine the methods used by the departmental head in making his estimates and to determine whether such methods are sound.
6. To assemble all the estimates as a complete tentative program for submission to the chief executive.

In his review of the estimates the chief executive must reach his conclusions from various standpoints, the chief of which are:

1. Whether the estimates of a given department if expanded should produce the results desired in view of adopted policy.
2. Whether the amount of each estimate is justified from the standpoint of its relative importance in comparison with the amounts of other estimates and in proportion to the total of all estimates.
3. Whether increases in estimates, as compared with the previous year, are consistent with desired rates of development of services.
4. Whether the total estimates represent an amount which the city can afford without assuming an undue burden of taxation or borrowing to excess.
5. Whether the amount to be raised from taxation and from miscellaneous sources represents the year's full share of the cost of government.
6. Whether the expenditures to be financed by borrowing will result in (a)

real additions to the fixed property of the city, or (b) the refunding of that portion of maturing debt not provided for by sinking-funds the redemption of which may be justly shifted to future years.

7. Whether in view of the financing requirements the existing system of revenue raising should be modified in any respect; that is, whether any items of revenue should be eliminated, or, if continued, whether the rates should be increased, or whether new sources of revenue should be established.

3. Legislative Control

This phase of control consists in the review, consideration and amendment by the legislative body of the programs of expenditure and of financing as presented by the executive. The final step in these processes is the enactment of an appropriation bill. Space does not permit a discussion of the question: To what extent should the legislative body circumscribe the operations of the departments by segregating or subdividing appropriations according to function, activity or object? This is the old question of the lump-sum appropriation. The writer believes that no general rule can be laid down. At least, the legislative body should express its will on all questions of policy which it considers important.

4. Control Over the Procurement of Labor

Many cities have established systems of civil service for the obviously desirable purpose of preventing as far as possible the employment of unqualified persons, unjustified promotions and undeserved discharges. Most of these systems are not fully effective for the following reasons:

1. They restrict executive discretion to such a point that satisfactory service, in many cases, is not obtained.
2. They place too great a premium upon length of service.
3. The specifications which define the qualifications of jobs are too indefinite.
4. They do not result in fair pay; the inefficient or lazy employee is often overpaid, so that the tendency of all employees is to settle down to the standard set by the inefficient.

What is needed is a set of definite specifications of the qualifications of each job confined strictly to the requirements of the work to be done, the elimination of over-emphasis upon length of service, and a recognition of the capacity as well as the qualifications of the worker. This, too, is a large subject, involving details too numerous for treatment within the space at hand.

5. Control Over the Procurement of Material and Contractual Services

In this field of control remarkable results have been accomplished. A system of central purchase only partly developed will effect a large saving. In any system of this kind the first step is to standardize all articles commonly used by departments so as to eliminate the purchase of special types or grades and make possible the drawing of standard specifications and the consolidation of contracts.

The elimination of special types and grades broadens the possible use of articles, permits the transfer of surplus supplies, materials and equipment to departments where they are needed, eliminating, in such cases, unnecessary purchasing. It also reduces the losses from obsolescence and depreciation. Finally, it increases the extent to which central purchase can be developed.

Central purchase when effectively carried on obtains lower prices, more prompt delivery, and the quality ordered and paid for—by the application of standard specifications. Moreover, it should make possible the employment of a trained purchasing agent.

6. Auditing Control

In order to make control over expenditures finally effective, it is essential to determine that the laws, regulations and executive orders which govern expenditures are adhered to, that expenditures are made with the approval of duly constituted authorities and in accordance with contract or agreement, and that the amounts to be paid are due. It is necessary that all these questions be determined before payment.

It is universally recognized that these responsibilities are discharged effectively only when delegated to a central authority. This authority is the city auditor. The work of this officer comprises more than the mere checking of prices, extensions and footings. One of his most important duties is to interpret the scope and purpose of each appropriation and fund, so as to ascertain that each claim presented for payment is consistent therewith. He must also prevent overexpenditure of an appropriation or fund, and this means withholding authority to incur an expenditure for the payment of which funds are not available under the law. This he does by an examination of orders and contracts with reference to the unencumbered balances of funds and appropriations.

Finally, the examination by the auditor must apply to all expenditures made by the city.

It is not uncommon to find that the auditor does not check the expenditures made from certain funds such as sinking-funds, pension funds, etc. There is no justification for such omissions.

The importance of making the work of the city auditor complete and thorough cannot be overstated. The efforts of the departmental heads, of the chief executive, of the legislative body and of any other controlling agencies cannot be fully effective if the work of the city auditor is performed weakly or within a confined scope.

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Campaign by the New Jersey State League of Municipalities for Revision of the New York Banking Law

By SEDLEY H. PHINNEY
EXECUTIVE SECRETARY, N. J. STATE LEAGUE OF MUNICIPALITIES

IT is quite the usual thing for a league of municipalities to take action in the case of legislation in its own state. It is not so usual for a such a league to conduct a campaign for changes in the law of another state. However, this is being done by the New Jersey State League of Municipalities in an effort to secure an amendment to the New York Banking Law in a way that affects the bond limits of New Jersey and other states.

Just as all roads lead to Rome, so most municipal bond offerings in the eastern and southern states are sold in the New York market, or even if sold locally, their price is influenced by their eligibility, or lack of it, for sales in New York. The New York law for some years has prohibited savings banks and other similar institutions from investing in the bonds of municipalities outside of New York State beyond 7 per cent of the ratables. The New Jersey law permits municipalities to issue up to 7 per cent of ratables, *plus an additional* 3 *per cent for school purposes*, with certain exemptions for revenue-producing property, etc. For several years New Jersey cities have found that the New York law, rather than the New Jersey law, set the practical limit to their bond offerings, and have been prevented from engaging in necessary school construction programs by the conservative provisions of the New York law.

Two years ago the League of Municipalities was inspired to efforts for relief by Mayor F. W. Donnelly of Trenton, whose plans for civic advance were hampered by the conservatism of laws enacted years ago by the legislators of the neighboring state. It was found that cities in other states were confronted by similar difficulties and were equally eager for relief. In the efforts made at that time, which included lobbying in Albany, representatives of Newark, New Jersey's largest city, were particularly active. Various complications and delays were

met. Efforts were continued and reviewed during 1927. A special committee of the League was appointed, with Mayor Donnelly as Chairman. Jerome T. Congleton, Corporation Counsel of Newark, and Commissioner Charles G. Phillips, of Montclair, were active, energetic members.

Meantime, the New York State Legislature had appointed a Joint Legislative Commission to revise completely the Banking Law. Hearings were held at which the New Jersey League of Municipalities presented its petition. The League sent notices of the hearings to the more important leagues of municipalities throughout the country and to the cities, except in New York State, above 50,000 population, with the text of the proposed relief measure and other information. The League has at various times in the campaign been in close cooperation with the Savings Banks Department of New York State and with the Savings Banks' Association. Leading bankers of New Jersey and insurance companies were urged to use their influence. The support of Governor Alfred E. Smith of New York State was enlisted through appropriate channels.

At the second hearing of the Joint Legislative Commission held on November 28, 1927, the Savings Banks' Association of New York State presented a memorandum containing recommendations which will grant, if enacted into law, the full measure of relief desired. New York banks may invest, by the terms of this memorandum, in municipal securities up to 10 per cent of the taxable valuations or up to 12 per cent of real estate. There are various other liberalizing features which have been duly noted in the columns of *The Bond Buyer*. The League will keep in touch with developments and do its best to secure enactment of these recommendations into law during the 1928 session of the New York Legislature. The outlook seems favorable.

The Municipal Bond Market

By SANDERS SHANKS, JR.
EDITOR, *The Bond Buyer*

WITH reports in hand for eleven and a half months, it is clear that the total of state and municipal financing for 1927 will exceed $1,500,000,000 and thus establish a new record for this class of borrowings. While a lowering of the level of the prices at which this huge mass of bonds could be sold might seem a logical result, the fact is that the closing weeks of the year find municipal bonds quoted at the highest prices, not only for the past year, but at better prices (or lower interest rates) than have been recorded in about twenty years. As the appended list shows, one city has just succeeded in floating an issue with a coupon rate of 3½ per cent while the 4 per cent bonds of virtually all the large cities now command a premium. The explanation of this satisfactory condition is the abundance of surplus capital which has accumulated during the present era of American prosperity.

And the outlook for the coming year is entirely favorable. The most expert students of economic conditions agree that bond prices should reach even higher levels in 1928 and that better business conditions may be looked for with large resultant surplus earnings made available for investment. A further assurance of a broad demand for securities created by States, counties and cities is the approaching maturity of approximately $2,000,000,000 Third Liberty Loan 4¼ per cent bonds. Between now and September 15, 1928, the United States Treasury must either retire these bonds through offers of new securities in exchange or by cash redemption. Experience with the larger Second Liberty Loan refinancing operation, just completed, has shown that much of the capital invested in Liberties is reinvested in municipals as the Government's refunding and refinancing program releases the funds invested therein. New offerings of Government refunding loans are mostly of the short term variety, bearing rates of 3½ per cent or less, and are taken in the main by banking institutions as an investment for reserve funds. The logical re-investment for the individual, the savings banks or insurance company having Liberty bonds due for redemption is the tax-secured municipal bond paying from one-half to one per cent more than Government securities and offering a wider choice of maturities.

REPRESENTATIVE RECENT ISSUES INDICATING PRESENT TREND OF MUNICIPAL BOND MARKET

Amount	Issue	Rate (%)	Maturity	Net Yield (%)
$ 350,500	Cambridge, Mass.	3¾	Various	3.57
1,560,000	Syracuse, N. Y.	3½, 3¾ & 4	1-20 & 1-40 Yr. Ser.	3.77
1,000,000	California	4	9-12 Yr. Ser.	3.87
6,499,000	Newark, N. J.	4¼	Various	3.87 & 3.89
2,150,000	Cleveland, O.	3¾ & 4¼	Various	3.897
20,000	Ligonier, Ind., Sch. Dist.	4½	11¼ Yr. Avg.	3.90
140,000	Jefferson County, Ind.	4¼	17 Yr. Avg.	3.93
333,000	Columbus, O.	4½	6¾ Yr. Avg.	3.96
200,000	Wilmington, Del.	4	9 1/3 Yr. Avg.	3.96
100,000	Muhlenberg Tp., Pa., Sch. Dist.	4¼	16 1/3 Yr. Avg.	4.01
100,000	Topeka, Kan.	4¼	6¾ Yr. Avg.	4.03
2,000,000	Orleans Par., La., Sch. Dist.	4½	28 Yr. Avg.	4.28
47,000	Wheatland, Wyo.	4½	20 Yr. Avg.	4.47
150,000	Uvalde Co., Tex., Road Dist. No. 3	5½	16 5/6 Yr. Avg.	5.01
30,000	St. Johns Co., Fla., Spec. Tax Sch. Dist. No. 2	5½	9 2/3 Yr. Avg.	5.63

Dallas Votes to Go Forward

Improvement Bond Program Approved Totals $23,900,000

BOND issues aggregating the substantial total of $23,900,000 were authorized by the voters of Dallas, Texas, at a special election on December 15. Definite approval was thus given to the "Forward Dallas" movement recommended by a Citizens' Advisory Finance Committee, headed by C. E. Ulrichson, in a comprehensive report resulting from two years of intensive study undertaken at the request of the Mayor and Board of Commissioners, the City Plan Commission, the Kessler Plan Association and the Chamber of Commerce.

There were fifteen items in the schedule of bonds voted on—all of which were approved—as follows:

Public schools, new buildings, etc., $1,900,000.
Street openings and widenings, building lines and underpasses, $5,500,000.
Parks and connecting boulevards, $1,500,000.
Sanitary sewer system extensions and improvements, $1,000,000.
Storm water drainage (city's share of cost of $8,500,000 program), $3,500,000.
Street paving (city's share), $3,000,000.
Fire department (new central station and other improvements), $350,000.
Incinerators for better garbage disposal, $150,000.
Libraries, additions and equipment, $500,000.
Institute of fine arts building and equipment, $500,000.
Municipal auditorium (downtown building and equipment), $1,000,000.
Municipal airport, $400,000.
Hospitals (additions to Parkland and other city-county units and improvements of grounds), $400,000.
Water system (extension of mains enlargement of pumping facilities, purification plants, etc., to be repaid from water revenues), $4,000,000.
For working staff, including engineering and legal services over period of improvements, $200,000.

In the expenditure of these funds the city administration will have the advice of a Citizens' Supervisory Committee selected by the leading business and civic organizations of the city. The total maximum period for carrying out the improvement program is to be nine years; and $4,000,000 is to be the maximum amount of bonds to be issued in any one year.

How Precious is the Right to Vote?

AT the recent National Safety Congress in Chicago the editor of THE AMERICAN CITY, in urging suspension of automobile licenses for drunken or reckless driving, hazarded the opinion that the average driver would rather lose his right to vote than his right to operate his car. Commenting editorially on this statement, the *Springfield (Ohio) Sun* goes a step or several steps farther: "This is putting entirely too much dignity and stress upon the average citizen's regard for his vote. The event has shown that millions of them would rather lose their vote than miss a square meal, or lose their Ingersoll watch, or even their rain check to a ball game. If there is any quantity rated as of less intrinsic value than a vote, it has not come into public ken."

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Ordinances

SANDS POINT, N. Y.—November 17, 1927.
MILWAUKEE COUNTY, WIS.—October 25, 1927.

Recent Zoning Decisions

LOUISIANA.—*State ex rel Manhein* v. *Harrison, Building Inspector of City of Shreveport*, 114 So. Rep. 159. Mandamus to compel the issuance of a permit for the construction of a station for the sale of gasoline, etc., in a residential district contrary to various zoning ordinances. *Held*, that the refusal of the permit was proper.

A reasonable, comprehensive zoning ordinance, passed under the state constitution and enabling acts, is a valid exercise of the police power.

A zoning ordinance amendatory of an invalid ordinance, and unenforcible alone, is itself invalid. The issuance of the permit was, however, properly refused, as contrary to a subsequent ordinance passed after the application for the permit and the beginning of this suit. The application gave no vested right thereto, and all property is held subject to the police power.

The prohibition of the construction, alteration or use of buildings except for conforming uses, is not a denial of equal protection of the laws because it excepts from its operation existing structures and uses. Nor does the authority to the City Council in a like manner to permit enlargements of buildings or erection of additional buildings on the same lot, where not detrimental to character of neighborhood, or to allow temporary buildings or buildings for public utility purposes render the ordinance discriminatory.

NEW JERSEY.—The *Newark Evening News* of November 11, 1927, reports another refusal of Chief Justice Gummere to issue of writ of certiorari to review a decision upholding a portion of a zoning ordinance, giving the reason, as before, that, although legislation under it had not as yet been enacted, the people of the state had passed the constitutional amendment validating zoning. The decision related to the undertaking establishment of Philip Apter and Sons.

OHIO.—*Village of University Heights* v. *Cleveland Jewish Orphan House*, United States Supreme Court, November, 1927. Under the zoning ordinance of the village, a Jewish orphan home was excluded from the entire village. The judge below held the ordinance unreasonable. The Supreme Court by refusing, without opinion, to review the decision, upholds the lower court.

PENNSYLVANIA.—Appeal of Alpern from Decision of Board of Appeals of City of Pittsburgh, Supreme Court, Western District, March Term, 1927. The owners of a lot at the corner of a commercial and a residential street wished to erect a building on that lot without a setback from the residential street. *Held*, that the principal frontage of the building was on the commercial street and that the provision in the ordinance requiring a setback for a building fronting on a residential street did not apply, since under the ordinance the building had only one front, which was on the commercial street, and was required to have only one front yard.

Signs and Billboards

ARKANSAS.—*Berkan v. City of Little Rock*, 298 S.W. Rep. 514. Under Crawford and Moses' Dig. Sec. 7529, conferring on municipal corporations the power to prevent injury and annoyance within their limits from anything dangerous, offensive or unhealthy, the city has the power to pass an ordinance prohibiting the hanging of signs within a designated area except electric signs of a given all-steel construction, the purpose being to eliminate cloth and similar signs. The area in question is the principal business area of the city.

PENNSYLVANIA.—Appeal of Liggett and The Alpha Sign Co., Supreme Court, November 28, 1927. In an excellent opinion the highest Court, in the state sustains the decision below, already given in these notes, declaring valid the provision of a zoning ordinance excluding billboards from a residential district.

Illegal Action by Board of Appeals

NEW YORK.—*Matter of Stillman* v. *Board of Standards and Appeals of City of New York, App. Div.*, November, 1927. The lower Court had, on certiorari, annulled the determination of the Board granting a permit to erect an office building in a residential district. In affirming the decision of the Court below, the upper Court says:

"The Board seems to have assumed that this modification of the Zoning Resolution for the benefit of a single property owner could be made because it was advantageous to the particular owner. The number of appeals to this Court in this class of cases prompts us to restate that there is no power in the Board of Standards and Appeals to vary zoning requirements for any such reason. It may vary 'where there are practical difficulties or unnecessary hardships in the way of carrying out the strict letter of the provisions' of the resolution 'so that the public health, safety and general welfare may be secured and substantial justice done.' (Zoning Resolutions, section 21.) These are the only criteria by which it must make its decision; whether the property under consideration is more suitable for a forbidden use than for a permitted one is immaterial. Thus, in the instant case the property in question was purchased as restricted property. It clearly appears that it has not substantially depreciated in value. Unquestionably a large profit would come to the owner if the restriction were removed, but it does not follow that he loses unjustly because it is not removed.

"In *People ex rel. Fordham Manor Reformed Church v. Walsh* (224 N. Y. 280), Chief Judge Cardozo writes:

" 'The power of the Board of Appeals is confined to variations in special cases to meet some unusual emergency, some unnecessary hardship.'

"As was said by Mr. Justice McAvoy, in *People ex rel. Werner v. Walsh* (212 App. Div. 635, aff'd 240 N. Y. 689):

" 'There were no "practical difficulties or unnecessary hardships" demonstrated at the hearing which justified relator in his request to be exempted from the general rule. The mere fact that a garage is more profitable than any other structure is not sufficient evidence of hardship.'

"The Board of Standards and Appeals should make its determination on the basis of these fundamental principles."

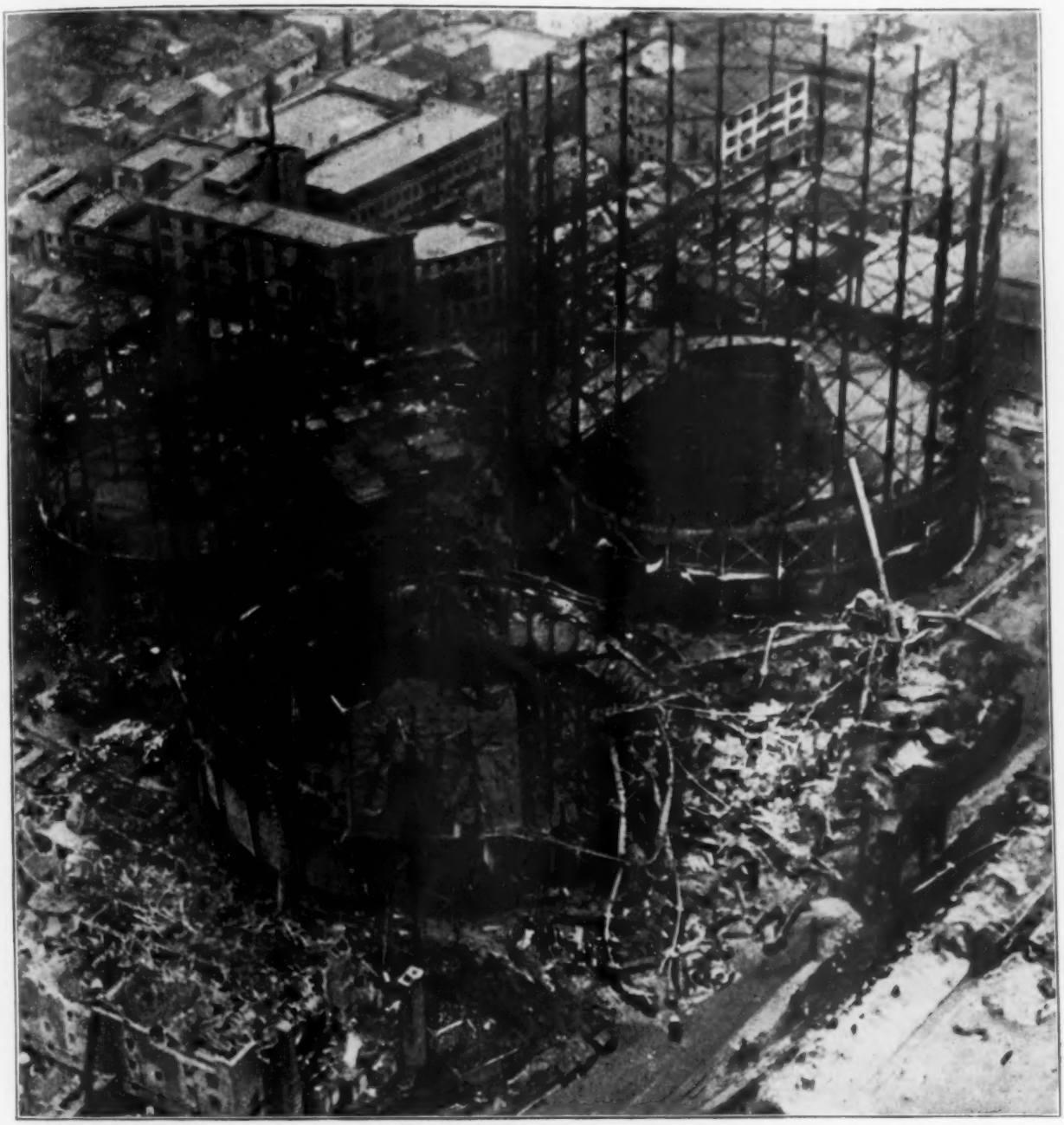
Recent Zoning Literature

Barnet Hodes, formerly Assistant Corporation Counsel of the city of Chicago, has written an article appearing in the December, 1927, number of *Chicago Realtor* entitled "Judicial Review of Zoning Board's Decisions."

The Second Annual Report of the Board of Zoning Appeals of the city of Baltimore is of unusual importance. It contains a full history of zoning in Baltimore, which will be most useful in other zoned cities.

The Niagara Frontier Planning Board, Tonawanda, N. Y., has issued a helpful pamphlet called "Town and Village Zoning." It contains a review of court decisions and model ordinances suitable for use in New York State and most valuable elsewhere.

The Municipal Index for 1928 will contain Mr. Williams' "The Progress of City Planning Law During 1927." It will be classified as heretofore under such headings as regional planning, building lines, excess condemnation, parks, planning commissions, platting, zoning, setbacks, and billboards. An extensive bibliography on city and regional planning, housing and zoning will also be included.



Aerial Photo by Acme

WRECKAGE RESULTING FROM GAS-TANK EXPLOSION IN PITTSBURGH, PA., NOVEMBER, 1927, IN WHICH 28 PERSONS WERE KILLED AND MORE THAN 400 INJURED.

Gas Tanks and Zoning in Pittsburgh

THE district in which the gas tanks are located is zoned by ordinance as a Heavy Industrial District and such tanks are permitted in this district. The zoning ordinance, however, prohibits the use of land within the Heavy Industrial District for residential purposes. In the early period of the city this territory was used entirely as a residential district, but on account of its proximity to the railroads and rivers it has become increasingly industrial, and residences are being crowded out by the mills and factories. The reason that a number of residences are located within this district is the fact that they were constructed prior to the passage of the zoning ordinance and are therefore permitted as non-conforming uses.

The street lying to the north of the property, on which the tanks are located, is the dividing line between the Heavy Industrial and Light Industrial Districts. The most severe damage to residences occurred in the Light Industrial Districts where residences are permitted.

A study of the question led the Planning Commission to consider gas holders of the type of the one that exploded as a permissible use in Heavy Industrial Districts; our advice being to the effect that very few fires or accidents had resulted from large gas holders. In general, the storage of gas in proper containers was considered less of a hazard than many other uses permitted in such districts, such as lumber yards, etc., and the tanks are of course less of a nuisance to surrounding properties than blast furnaces and other industries of the type that emit large volumes of smoke and dust.

In this case the Equitable Gas Co. has agreed not to rebuild the wrecked tanks and to discontinue the use of the existing tank.

V. N. ARTHUR, Chief Engineer,
Department of City Planning, Pittsburgh, Pa.

Small-Town Community Building Serves Many Municipal and Civic Purposes

By O. J. SWANDER

HOLYROOD, Kans., a small town in the western part of the state, with a population of only 412 people, recently completed a community building that any city ten times its size could well be proud of. The building, which is located in the business section of the town, is a one-story, red brick structure trimmed with stone. It is 40 by 60 feet in plan, with a full basement under all except that portion of the building occupied by the Fire Department. The bond issue of $14,000 necessary to complete the building carried by a large majority.

In addition to serving as the administrative headquarters for the city, it houses the Fire Department, the public library, and the jail, and has a large dining-room and a well-equipped kitchen in the basement.

The fire apparatus room is at the rear of the building with the floor on a level with the driveway outside. Ample room is provided for two pieces of apparatus, and two large folding doors insure a prompt "get-away."

A large room on the first floor serves as a meeting-place for the Town Council, and it is also available for band practice or other public gatherings. The city owns a number of folding chairs, and, when the occasion demands, the room is made into a small auditorium.

Another room across the hall is being fitted up by a local women's club for a public library; a librarian is to be appointed and the room opened to the public on certain afternoons. Heretofore, no suitable quarters have been available, and this will be the town's first public library.

The jail is also located on the first floor. It is vastly different from the usual small town "lock-up." There are no cells; instead, there is one large, well-ventilated and well-lighted room. The floor, ceiling, and walls of this room are of reinforced concrete, and a prisoner would experience considerable difficulty in digging his way out. Individual cots are provided, and a wash-room is available for the convenience of the prisoners.

The schools, as well as several private organizations, are planning to make good use of the dining-room and the well-equipped kitchen in the basement. The tables are set on saw-horses and may be quickly removed and the dining-room made available for parties and socials.

The boiler for the hot-water heating system is installed in the basement, and is cut off from the remainder of the building by a fire-door. This boiler is equipped with a special coil to circulate the water through the hot-water heater. A unique feature is an ash-hoist to facilitate removing the ashes.

The building also contains a vault, wash-rooms, and storerooms.

The citizens are justly proud of the building, and anticipate that it will serve the needs of the community for many years.

CITY HALL, FIREHOUSE AND COMMUNITY BUILDING, HOLYROOD, KANSAS

Decentralization as a Cause for Metropolitan Pride

To the Editor of THE AMERICAN CITY:

What American newspaper would venture to advertise triumphantly a loss of population by its home city in the interest of a rational and wholesome growth of its suburban region?? We find such a daring Editor in New South Wales. Sydney is a metropolis which has been called "the New York of Australia"—a city which, by the way, wholly exempts improvements and personal property from taxation. Hear the Sydney *Morning Herald* of September 6, 1927:

"One does not need a colossal imagination to see that Sydney is moving towards a destiny of great power. The simple analysis of our population over the last quarter of a century, for example, presents a picture of vital, expanding life that defeats all the pessimism to which critics from other countries, vaguely but glibly aware of our presence, often drive us. In 1901, 118,211 people lived in the metropolis and 369,721 in the suburbs. In 1911 the city harbored 119,724 and the suburbs 516,582.

"Ten years later the situation had begun to move towards the development that is spreading Sydney out into the country as far as Hornsby on one side, to Parramatta on another, and to Cronulla in the south. At the end of that decade, 1921, the population in the municipality of Sydney had fallen to 111,059, and in the suburbs 795,044 people were living. At the end of December last year the population of the city was 107,880, and the suburbs 962,630, a total of 1,070,510. Thus the movement has been away from the city to the country, where huge suburbs have been opened, big, thoroughly organized centers of life, fed by railway, tramway and bus services, and laid out, often, on a plan which will enable them to develop freedom and a certain beauty."

Does not this stir the thoughts of all who are concerned with city growth, land overcrowding and city congestion?

BOLTON HALL.

New York, December 6, 1927.

Back Seat License Driver's Alibi

THE decorum of Traffic Court was shattered last night when James Rooney, colored, of 90 Arlington street, charged with driving without a license, told Judge Howe he had been driving a year on a "back seat driver's license."

"Well, you're supposed to have a front seat driver's license," Judge Howe said after the laughter had subsided. "Let's see that license."

Sergeant Gorman, who gave Rooney the summons, handed the "license" to Judge Howe. The card read: "This entitles the bearer to be a back seat driver during 1927." The "license" was signed "U. Worryem, Commissioner of By-Ways."

"Where on earth did you get that thing?" Judge Howe asked Rooney, with a smile.

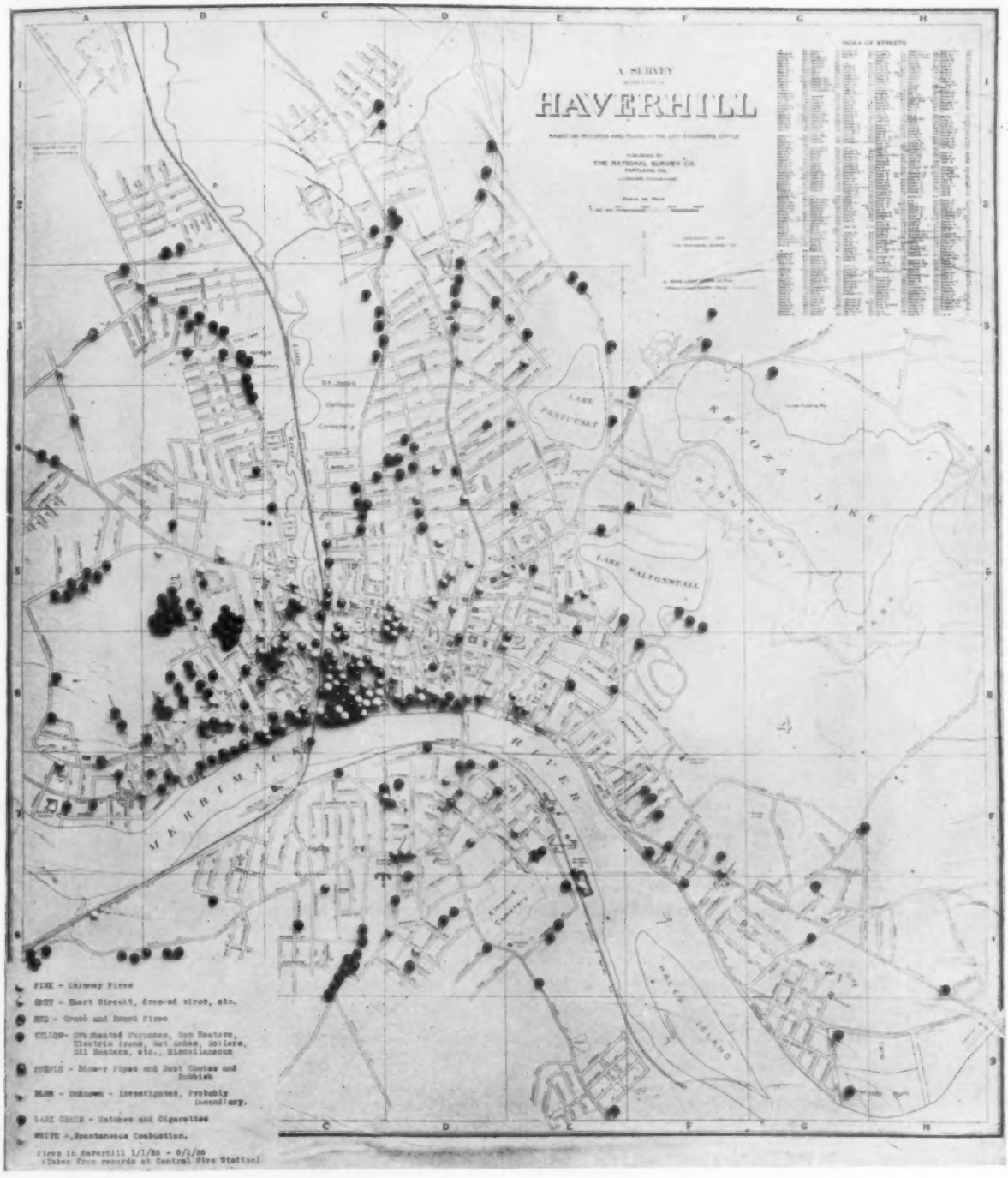
"Three colored men sold it to me for $3. I took an examination and when I passed the men gave me the license," Rooney declared.

"Can you read?" Judge Howe asked.

"No, sir," Rooney replied.

"Well, you wait until court is over and then we'll see if you can read or not," Judge Howe said. Sentence was later suspended.

—From the *Newark (N. J.) Evening News* of December 16, 1927.



Spot Map Helps Fire Prevention Work

ABOVE is a map of Haverhill, Mass. The dots are colored pins representing fires. The map was made at the suggestion of field engineers of the National Fire Protcetion Association so that the city might see just where its too many fires were occurring. As can be seen even on the small reproduction of the map above, a large proportion of the fires were shown to be occurring in a triangular-shaped district, two sides of which were bounded by the river and the railroad.

A fire prevention bureau was organized in the Fire Department, and two inspectors were assigned to inspect this district once a week or oftener, accomplishing more by frequent inspection of this small area, than by scattering their efforts over the whole city. The spot map also showed the areas subject to brush and grass fires in the spring months, to help motorcycle patrolling.

It is usually enough on such a map to designate fires in buildings with, for instance, black pins, chimney fires with red ones, brush and grass fires with green ones, and dump fires with yellow ones. False alarms, automobile or other fires, if frequent, can be shown on other maps.

Model "L," shown above, mows and rolls 4 to 6 acres a day. With gang units attached it cuts 10 acres a day on one gallon of gasoline.

It assures you

Dependability

Impressive evidence of the leadership of Coldwell Lawn Mowers is found in their widespread use by park superintendents and gardeners. The dependable service that these users are getting from the Coldwell is exactly what you want from your lawn mower.

Literature illustrating and describing the Coldwell line will be sent on request. In writing please specify the type of mower in which you are interested.

Hand / *Horse*

SINCE 1892

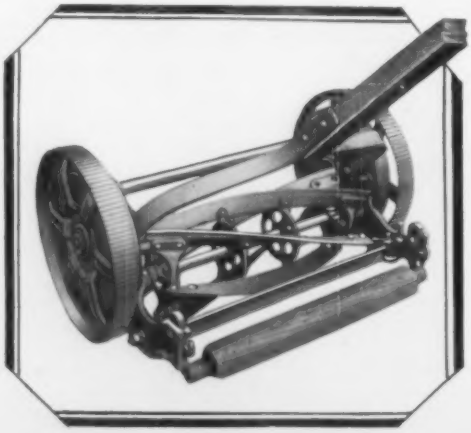
COLDWELL

DEPENDABLE LAWN MOWERS

Gasoline / *Electric*

COLDWELL LAWN MOWER CO., NEWBURGH, N. Y., U. S. A.

Shown in picture on right is the Imperial Roller Bearing — the best mower on the market for hard service. Durable, light, easy to push, and requiring minimum of attention to adjustments.



Timken Tapered Roller Bearings; five keen blades of hardened crucible steel; self-sharpening bottom knife; carefully machined parts to insure perfect operation and long service.

THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, *Attorney at Law*

Administration of Safety Measures May Be Delegated to Subordinate Officers

An ordinance of the city of Birmingham, committing to the local Board of Health the right to refuse a permit to sell milk where the applicant is deemed not to be a proper person to receive the permit, was upheld by the Alabama Supreme Court in the case of Walker vs. City of Birmingham, 112 Southern Reporter, 823. In the course of an extended opinion, the Court said:

"Private rights of property, the right to carry on a lawful and necessary business, must be protected against unwarrantable invasion, and authority must be restrained within reasonable and proper bounds on the one hand; on the other, the health and safety of the people must be conserved. Necessarily much must be left to the discretion of the municipal authorities, as, plainly enough and properly enough, the ordinance contemplates. Defendants [the municipal authorities] were in the exercise of a discretion vested in them by law, though subject to regulation by the courts, for abuse and judicial interference must be denied, unless and until it is made plainly to appear that they transcended the power granted to them, and abused it without the warrant of facts. In other words, the burden is on appellant [the applicant for a license] to show that, as alleged, appellees [municipal authorities] have acted arbitrarily, unreasonably, and without the warrant of necessary facts in refusing to issue a license or in refusing to renew the license under which for some years appellant has engaged in business."

In Absence of Franchise to Lighting Company, Municipality Can Enjoin it from Crossing Its Street with Wires

The right of an Iowa municipality to enjoin an electric company from crossing its streets with wires in transmitting power, without a franchise from the town, was recognized by the Supreme Court of the state, in the case of Incorporated Town of Ackley vs. Central States Electric Co., 214 North Western Reporter, 879.

Treating the wires as constituting an obstruction in the street, although placed 30 or 35 feet above the surface, the Court says:

"To be an obstruction of the street, within the meaning of the statute, it is not necessary that the thing charged to be an obstruction rests upon, or is in immediate contact with, the surface of the street. It may be an object which is out of the reach or way of ordinary traffic; yet if it be so situated with relation to the street that it may endanger the traveling public, it comes within the rule against obstructions, especially where it is of a dangerous character. . . .

"However, from another angle, the city being the owner in fee simple of the streets, of necessity its rights extend above the surface thereof. How far, we need not determine in this case; but, being entitled to the absolute control and occupancy of the space above these streets, any invasion thereof by stretching wires thereon at this height of necessity is an infraction of the rights of the city, and amounts to a trespass."

Charter Held Not to Authorize Withholding Pay of Suspended Police Officer Pending Charges

Officer Skinkle was suspended without pay from the New York police department on a charge of unwarrantably assaulting one Quinn. Holding that the suspension was proper, but that there was no authority for stopping pay until there had been a conviction under the charge, the New York Supreme Court, Appellate Division, said in the case of Skinkle vs. Murray, 223 New York Supplement, 146:

"By its [a municipal rule's] terms the chief of police is authorized to suspend from duty any patrolman until the commissioner takes action upon the charges pending against the officer suspended. The chief is not authorized, however, to withhold his pay pending trial of the charges. This we cannot think an oversight, because the authority to withhold pay of an officer as a punishment after conviction is given in the charter. Had it been intended to confer authority to withhold pay pending charges, we think it would have been so expressed in the rule or the charter, and thus we cannot think that the authority to withhold pay may be implied from the authority to suspend from duties.

"We recognize that it is important to uphold the authority of the heads of police departments, and that the courts should not interefere, unless necessary, with the regulations and orders of those departments made for the purpose of maintaining discipline. . . . But those having authority to discipline and control in a police department must act reasonably within the authority granted them. When a rule of the department has been adopted, which applies specifically to suspensions pending charges, we think the terms of the rule limit the authority. The oral direction of the commissioner of public safety should not in this case be considered as an order which enlarged the scope of the formal rule. When a policeman is suspended from duty, the public is protected against any further aggression or wrongful act on his part. If the charges against him are serious, he of course should not be permitted to have authority as policeman; but he is probably living upon his salary, the trial of the charges against him may be long delayed, and he may be innocent. If innocent, although his pay has been withheld, he, it is true, could collect it. But also, if innocent, while his pay is being withheld, it may be that he and his family would unjustly suffer. It does not seem essential to discipline in the department that the pay of a policeman should be withheld during his suspension from duty, or, if essential, the charter or the rule should so provide."

In Absence of Ordinance Creating Office, Patrolman Held to Be an Employee of Village and Not an Official

The village authorities of Elmwood Park employed one Johnson as an additional motorcycle patrolman, but his position was not provided for by ordinance. He was fatally injured in the line of duty, and his widow applied for an award under the Illinois Workmen's Compensation Act, which provides for awards for injuries to village "employees," but not village "officials." The application was resisted on the ground that Johnson was an "official," not an "employee."

The Illinois Supreme Court decided that the patrolman's status was that of an employee, although it was intimated that he would have been rated as an official had his position been covered by ordinance. The Court said:

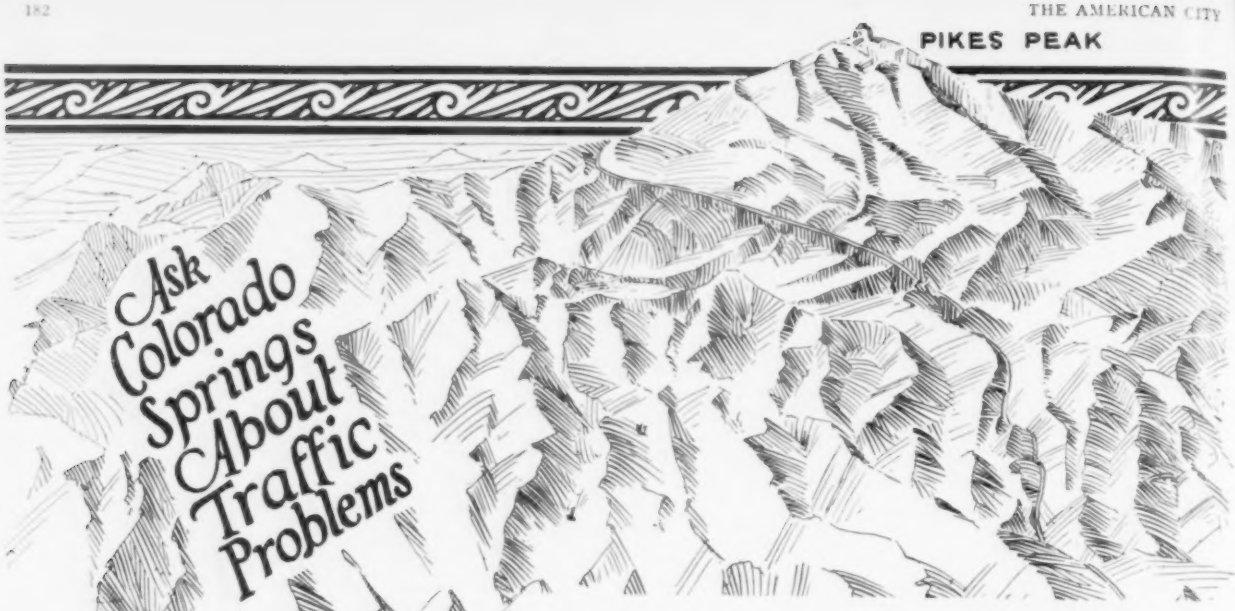
"The office of police patrolman was unknown to the common law and does not exist in this state by statute, . . . and therefore does not exist in any of the municipalities of the state unless created by ordinance." (Johnson vs. Industrial Commission, 158 North Eastern Reporter, 141.)

It was argued that Johnson was a *de facto* official, if not a *de jure* official, but the Court observed that "while there is some authority to contrary, the great weight of authority is to the effect that there can be no officer, *de jure* or *de facto*, where there is no office to fill.

Comfort Stations Are Not Necessarily Nuisances as to Owners of Adjacent Property

Refusing to abate a municipal comfort station upon the plea that it *per se* constituted a nuisance against nearby property owners, the Washington Supreme Court said in the case of Zey vs. Town of Long Beach, 258 Pacific Reporter, 492:

"A comfort station is not a nuisance *per se* and may or may not be such in fact, depending upon the attendant facts and circumstances. . . . Before it can be held that the comfort station constituted a nuisance, it must be found that it interfered with the comfortable enjoyment of the appellants in their life and use of their property. . . . There is no direct evidence that the rental value of the rooms or cottages was impaired by the presence of the comfort station or that the value of the property was reduced. It is undoubtedly true that the presence of the comfort station directly to the west and immediately in front of the residence of the appellants is not a thing to be desired. It would of-



Ask Colorado Springs About Traffic Problems

Everyone, who travels, at sometime during his lifetime, goes to Colorado Springs. The beauty of its mountain scenery and the exhilarating atmosphere put snap into tired minds and bodies and build red corpuscles.

There are many interesting things to see in Colorado Springs and its surrounding territory. Particularly will you notice the cleanliness of its streets and the smooth and orderly system with which police chief H. D. Harper handles the city traffic. Chief Harper, like the traffic officials in nearly 600 other progressive cities, believes strongly in the through boulevard system and in Sure-Stop Traffic Markers.

These rubber markers are designed to be set upright in the pavement and can be run over without jar or jolt to the car or injury to the signal. They *flip right back to an upright position when* run over *and are cheaper to maintain than painted lines.*

An interesting booklet describing these traffic signals will be sent to any interested city official for the asking.

Standard Traffic Marker Co.

1715 E. Second Street,
WICHITA, KANSAS

fend against the esthetic sense, but this would not be sufficient to make it a nuisance."

Ordinance Fixing Wage Scale for Public Work is Void as Defeating Competition

A municipal corporation, though not required by its charter to let contracts for public works to the lowest bidders, and though clothed as to such matters with the broadest discretionary powers, has no authority to adopt an ordinance prescribing a fixed scale of wages that shall be paid for all public work of the city. Such an ordinance of the city of Atlanta is illegal, because it tends to encourage monopoly and defeat competition, and also tends to put a heavier burden upon the taxpayers than they would have to bear if free competition were allowed; and all contracts made in pursuance thereof are void. (Wilson v. City of Atlanta, 139 South Eastern Reporter, 148, decided by the Georgia Supreme Court.)

Charter Provisions Vitiated a City Engineer's Estimate and Claim for Additional Compensation

Where a city charter provides that an official engineer shall be under oath and bond for the faithful performance of his duties as official engineer, an estimate made of the cost of a sewer system by an engineer not under oath nor bond does not constitute a valid basis upon which to let a contract for the construction of a sewer system and is void.

Where a city charter expressly provides that the engineer may be allowed only 3 per cent of the contract price for putting in a sewer system, as additional compensation, a contract for a greater compensation is illegal and void. (Wimmer vs. Knight, 259 Pacific Reporter 640, decided by the Oklahoma Supreme Court.)

Ordinance Making Landlord Liable for Tenant's Water Rent Held to Be Void

An ordinance unqualifiedly making an owner of premises liable for water used by his tenants was held to be void, in the decision handed down by the Virginia Special Court of Appeals in the case of Etheredge v. City of Norfolk, 139 South Eastern Reporter, 508. The Court said:

"When a municipal corporation engages in the business of furnishing water to its inhabitants by means of a permanent water-works, it stands on the same footing, and has exactly the same right to make and enforce reasonable rules and regulations, as a private corporation upon whom a franchise for that purpose has been conferred, and therefore an ordinance prescribing such regulations has the same force, and no more, of a by-law of a private corporation whose powers are of like character and conferred for the same purpose. . . .

"The authorities are also practically unanimous that the regulation of a water company or ordinance of a municipality which requires the property owner to pay a delinquent bill for water furnished the tenant of the premises, which the owner has not contracted to pay, is unreasonable and void, unless a lien is given on the premises by statute, or there is at least some statutory authority therefor by virtue of the charter or otherwise."

The Court Rules Upon an Exclusive Garbage-Removal Franchise Under an Ordinance Requiring Owner to Separate Refuse and Pay for Removal

The public health, not the convenience and prosperity of garbage contractors, is the chief aim in granting monopolies for garbage removal, according to the view taken by the Kansas City Court of Appeals in the case of Harper vs. Richardson, 297 South Western Reporter, 141.

The city of St. Joseph granted plaintiffs an exclusive franchise for the removal of garbage, under an ordinance requiring the owners to separate garbage from other refuse and requiring the payment of a fee for the removal.

The plaintiffs unsuccessfully sought to restrain defendant from removing garbage which plaintiff had refused to remove. They attempted to justify their refusal under a provision of the ordinance that purported to excuse them from removing garbage that had not been separated or for persons who had not paid the required fee. The Court holds that this provision of the ordinance was void. The Court said, in part:

"It must be remembered that it is the city's right, under the police power granted it by statute, to provide for the public health, and to this end its right to grant an exclusive franchise may not be questioned. The weakness of plaintiff's position is that they assume a right under their franchise to penalize the property owners for infractions of the provisions of the ordinance, providing an orderly and legal method of punishment, by taking into their own hands and executing a method of punishment, by refusing or neglecting to remove the garbage because not separated, and because the nominated fee for such removal was not paid in advance. Such a situation would defeat the very purpose for which the said special ordinance was enacted, to wit, the conservation of public health. . . .

"Nor was the chancellor in error in finding that part of the ordinance permitting plaintiffs to refuse to remove garbage, and to permit it to remain upon said premises and rot thereon and become dangerous to the health of the citizens, to be void for the reason it is inconsistent and contrary to the purposes which form the basis of its enactment."

An Unexecuted Contract for Compensation by Arbitration Does Not Preclude a City from Resorting to Condemnation Proceedings

Proceedings brought by the city of Chadron, Neb., to condemn a right-of-way for water pipes were resisted by property owners on the ground that the city had contracts for the right-of-way under an agreement that the compensation was to be awarded by arbitrators. The city denied that an authorized or valid contract had been made, and attacked the arbitrators' award as being unjust. Disposing of the controversy in the city's favor, the United States Circuit Court of Appeals, Eighth Circuit, said in the case of Grantham vs. City of Chadron, 20 Federal Reporter, 2d Series, 40:

"The city, in obtaining the right of way for a pipe line, was exercising a right conferred upon it by statute, as a police power, having as its purpose the supplying of water to its inhabitants. The Supreme Court of the United States, in Northern Pacific Railway Co. v. State of Minnesota ex rel. City of Duluth, 208 U. S. 583, 28 S. Ct. 341, 52 L. Ed. 630, held that the exercise of the police power in the interest of public health and safety is to be maintained unhampered by contracts in private interests, and, further, that the right to exercise the police power is a continuing one that cannot be limited or contracted away by the state or its municipality.

"In the instant case the city of Chadron refused to recognize the existence of a valid contract for the purchase of the right-of-way, but proceeded to appropriate the lands of appellants under the ordinance enacted. We are of the opinion that the effect of the ordinance enacted by the city was only a repudiation of the alleged contract of arbitration; therefore no federal question is presented. It is well settled that the mere repudiation of its contract is not an impairment of the contract, within the meaning of the Constitution of the United States."

That an Ordinance Within the Police Power May Have Been Prompted by Selfish Motives Does Not Invalidate It

An ordinance of the city of Atlanta forbids auction sales of watches, jewelry, etc., between the hours of 6 o'clock p. m. and 6 o'clock a. m. Its validity was attacked on the ground that it resulted from a conspiracy of retail jewelers to destroy competition. But the Georgia Supreme Court sustained the validity of the measure as being a proper police regulation, citing with approval a holding by the Court of Appeals of New York that a statute forbidding auction sales at night in large cities had such relation to the peace, safety, and protection of citizens as to come within the police power. The Supreme Court observes concerning the motives prompting adoption of the ordinance:

"The courts cannot inquire into the motive of the defendants in pressing and procuring the enactment of this ordinance, or of the Mayor and General Council of Atlanta in enacting the same; nor can they set it aside, if it is not arbitrary and unreasonable, is not ultra vires [beyond the municipal power], or is not unconstitutional." (Clein vs. City of Atlanta, 139 South Eastern Reporter, 46.)

A Country Farm Operated by Y.W.C.A. Held Not Tax-Exempt

A country farm conveyed to the trustees of the Y. W. C. A. to be used in connection with its town plant as a summer home, where guests and visitors are charged for meals and lodging, such charges going to maintenance and deficit paid by the Association, such property is not a necessary adjunct to the Association and should not be exempt from taxation. (County of Lancaster vs. Young Women's Christian Association, 19 Pennsylvania Municipal Law Reporter, 79.)

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Before completing your 1928 plans, acquaint yourself with our method of utilizing this product for salvaging and rejuvenating old highways.

Costs are surprisingly low. Results — uniformly satisfactory.

There is a Tarvia Representative nearby who will gladly discuss the detail with you.

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MUNICIPAL AND CIVIC PUBLICATIONS

Prices do not include postage unless so stated

Urbanization.—By John Giffen Thompson. E. P. Dutton & Co., New York. 1927. 683 pp. $6.00.

The long-continued movement of population from rural districts to cities, in the United States, Canada, Great Britain, much of the continent of Europe, Australia, and parts of Asia, with the great changes in environment that are involved, and the growing political and social influence of the cities, raise questions as to the effect of this movement upon government and society that have not received sufficient analytical and comprehensive study. This book enters upon the task from the political point of view in the main. Geographical groups without significant political entity are not considered urban. The author, who has been a member of the faculties of the Universities of Wisconsin and Illinois, has done a very interesting and thorough piece of work, examining the characteristics and influences of political and social life of city and country both by comparison in the past and present and as affected by the cityward movement. The traditional indictment of this movement and of the cities themselves is found to be poorly grounded, this conclusion being based upon a great amount of painstaking research, thoroughly documented in its setting forth.

Local Government Abroad.—Volume 1, number 1, of a new quarterly issued in connection with the International Union of Local Authorities contains a review of "Changes in Local Government Systems," an article on "Rural Communes in Prussia" and news and reviews under such heads as "City Government" "Traffic Problems," "Good Results from City Planning," "Sewage Treatment," etc. The next is announced to contain articles on methods of municipal finance in different countries. The publication has been started with the idea that "the rapidly increasing functions and responsibilities of local authorities involved the constant consideration of new and changing problems, and the more light that can be thrown upon possible solutions of these problems the better, not only for the local authorities themselves, but for humanity at large." 2 shillings per copy. 6/ per annum. (Address Municipal Journal Ltd., 52 Lincoln's Inn Fields, London, S.W. 2.)

Louisville Traffic Survey.—Report and recommendations prepared for the Mayor's Traffic Committee by L. Segoe, consulting engineer, dated June 10, 1927. It is presented in two parts, the first analyzing the principal causes of the demand for the relief of traffic conditions, describing the survey made, and giving recommendations for the improvement of the operation of existing street facilities; this volume contains 67 printed pages and 16 pages of blueprint and other exhibits. Part II presents a thoroughfare plan, with suggestions for financing, and a study of city and interurban electric lines and motor-bus lines; it contains 43 printed pages and 20 blueprint exhibits. (Apply to Mr. Segoe, 1108 Traction Building, Cincinnati, Ohio.)

Health Bulletin.—A new publication that has appeared at irregular intervals during 1927, prepared by the Insurance Department of the Chamber of Commerce of the United States, for the especial use of health committees. No. 1 (6 pp.) is entitled "Prolonging Life by Cooperative Effort; No. 2 (4 pp.) "Health and Community Prosperity," this bulletin being sponsored by the Committee on Administrative Practice of the American Public Health Association as part of a cooperative health program for commercial organizations; No. 3 (4 pp.) is "The Health of the Business Man." (Apply to the Insurance Department of the Chamber, Washington, D. C.)

The Elements of Crime.—By Boris Brasol, M. A. Oxford University Press, American Branch, New York. 1927. 433 pp. $5.00.

While not purporting to be an all-embracing study, this book is a searching investigation and discussion of crime considered on the one hand as an offense against the existing social order, and on the other as a psychophysical problem relating to the individual. The author was at one time prosecuting attorney of the St. Petersburg Supreme Court, and studied criminology at Lausanne and Paris by selection of the pre-war Russian Ministry of Justice; in 1925 he was nominated honorary member of the Advisory Board of the Bureau of Criminal Science in New York. The first part of the book, dealing with the social aspects, considers economic, religious and broad educational factors, and the relation of crime to legislation and procedure; the second part takes up biological and psychic elements, the legal aspects of responsibility for crime, and a discussion of the relation of mental diseases to crime. The author brings a broad outlook (and perhaps an over-facile pen) to the subject, and has produced a thought-provoking volume.

Comparative Tax Rates of 249 Cities, 1927.—A sixteen page reprint from the *National Municipal Review* (December, 1927), by C. E. Rightor, Chief Accountant, Detroit Bureau of Governmental Research, Inc. Mr. Rightor's annual report on tax rates, compiled from data furnished by city officials, chambers of commerce and other sources, is becoming a standard. The tabulations, arranged according to population figures as of July 1, 1926, contain, in addition to detailed information as to tax rates and bases of these rates, such information as dates of each city's fiscal year, and tax collection period. The whole is prefaced by a discussion of the whole subject including the wide range of tax rates, the trend of property taxes, and the present problems of assessments and exemptions. (Apply to the National Municipal League, 261 Broadway, New York.)

A Model City Charter.—This is the revised edition of the National Municipal League's model city charter as prepared by a Committee on New Municipal Program. No considerable departure has been made from the principles set forth in the "Model Charter of 1915." The "Home Rule Provisions Recommended for State Constitutions" included give the city authority to exercise all powers relating to municipal affairs; while the charter in general provides for the council-manager form of government with proportional representation. For complete description, see THE AMERICAN CITY, November, 1927, p. 599. 78 pp. 50 cents. (Apply to National Municipal League, 261 Broadway, New York.)

Governmental Research Association — 1927 Proceedings.—Complete report of the New York sessions of November 9, 1927, with detailed accounts of subsequent round-table meetings held in conjunction with the National Municipal League and the American Civic Association. $2. (Apply to Association, 261 Broadway, New York.)

Annual Leaves of Absence With Pay.—The Bureau of Public Personnel Administration, in a 3-page article in *Public Personnel Studies*, November, 1927, analyzes data based upon extensive investigations regarding leaves of absence—particularly in public service, tabulates conclusions arrived at and puts forth a series of recommendations, tentative in nature because "there is at present no scientific basis afforded for determining what employees should and should not be granted vacations." (Apply to the Administration, Mills Building, Washington, D. C.)

Williamson's Village Laws of the State of New York.—By John T. Fitzpatrick, of the Albany Bar. Williamson Law Book Company, Albany, N. Y. 1927. Second Edition. 992 pp. $23.00.

This compilation, amended to the end of the legislative session of 1927, contains Village Law, General Municipal Law, Public Officers Law, Condemnation Law, and Miscellaneous Provisions of the Public Service Commission Law, Transportation Law, Corporations Law, Town Law, County Law, Public Health Law, Election Law, Poor Law, Education Law, and laws governing conservation, highways, taxes, and penal matters as these relate to villages. Annotations, forms, and instructions are included, and the comprehensive index is arranged for ready reference use.

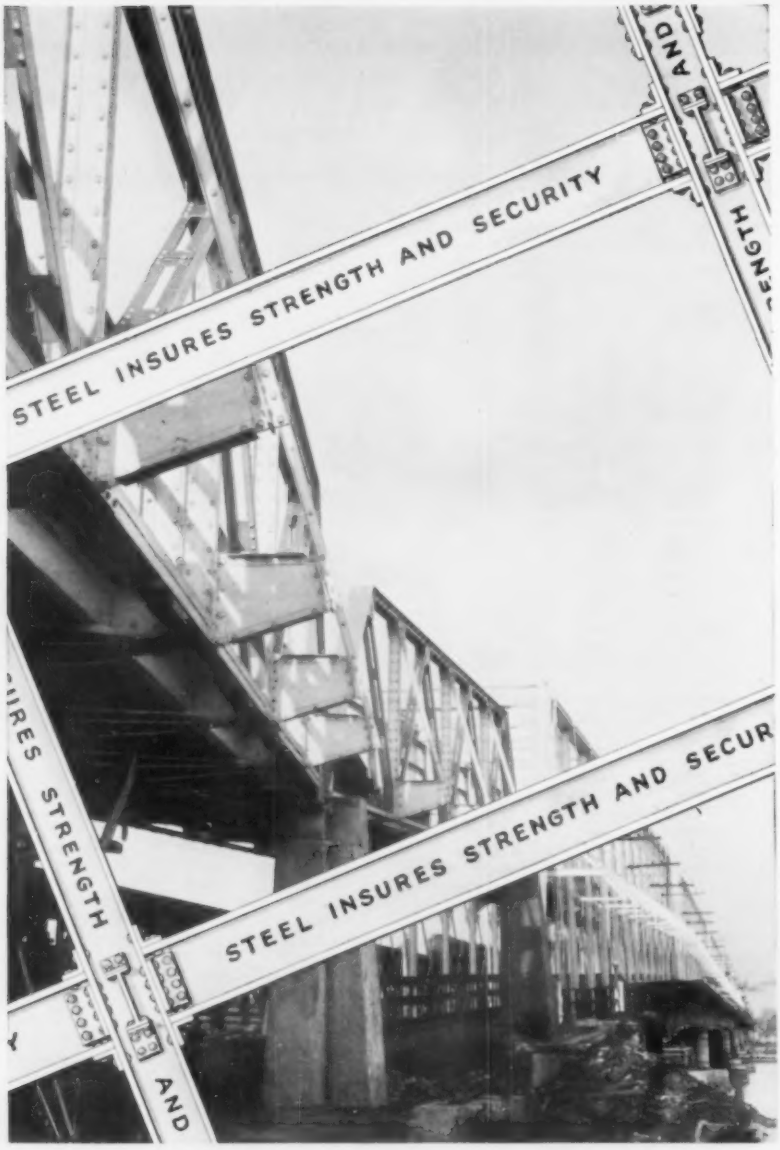
County Government Reform in North Carolina.—By E. C. Brooks, President, North Carolina State College of Agriculture and Engineering, and Chairman of the County Government Advisory Commission. A 4-page article from *The Bond Buyer*, of November 12, 1927, tracing progress from 1868 when the new State Constitution made provision for a county governing commission, to the reform acts of 1927. 30 cents. (Apply to *The Bond Buyer*, 67 Pearl Street, New York.)

Annual Report of Milwaukee County Park Commission and of Regional Planning Department, 1926.—A 64-page booklet, transmitting to the County Board the reports of the Park Commission on administration and on planning, the latter occupying the greater space and being in the form of a report by W. F. Cavanaugh, County Highway Commissioner and Planning Engineer, with special reference to right-of-way widening in connection with a major thoroughfare plan, platting guidance and control, and zoning. Illustrated. (Apply to the Commission, 90 Mason Street, Milwaukee, Wis.)

Book of Standards, American Society for Testing Materials, 1927.—This consists of two volumes, of 871 and 1,000 pages, respectively. Part I, the first volume, contains 144 standards relating to metals; the other volume, Part II, contains 193 standards relating to non-metallic materials. In both volumes there are given 3 standards applying both to metals and to non-metals. Methods of testing, definitions of terms, and recommended practices in effect at the time of publication, are included. A list of the 175 current tentative standards, for metals and other materials, is also given in each volume. The adopted standards are published in this form every three years, with annual supplements. Cloth, $7.50 for either Part, $14 for both; half leather, $9 and $17. (Apply to the Society, 1315 Spruce Street, Philadelphia, Pa.)

Advertising Tours and Exhibits.—A booklet by Roger Miller, manager of the Asheville, N. C., Chamber of Commerce, and published in connection with the 1927 convention of the National Association of Commercial Organization Secretaries. There is a 7-page discussion of the use and conduct of such tours and exhibits on the part of communities, and a supplement of 16 pages, giving lists of tours and exhibits that have been made for the benefit of various cities, and study-outlines to aid other communities. (Apply to Mr. Miller.)

The California City Planning Act of 1927.—A 5-page article by Charles H. Cheney in *Community Builder* for December, 1927, presenting briefly the general provisions of the Act. It is to be concluded in the following issue. The Act, as annotated by Mr. Cheney, was reviewed by Frank B. Williams on page 813 of THE AMERICAN CITY for December. 35 cents. (Apply to *Community Builder*, 825 Union League Building, Los Angeles, Calif.)



THIS IS TRUE PERMANENCE

In 1873, fifty-five years ago, a single-track steel bridge was built across the Susquehanna at Havre de Grace. It did service as a railroad bridge until 1908 when, rails removed and flooring laid, it became a highway bridge. With time the flood of traffic grew until last year more than 275,000 vehicles crossed it —maximum daily traffic reached 4500 cars. Greater facilities became imperative.

Only with so flexible, so adaptable a structural material as steel could the most economical solution have been found. Another level—an upper deck—was built over the old roadway. The original structure was found easily, economically adaptable to the new plan. The Havre de Grace bridge has been doubled in capacity at a bare fraction of the cost of a new bridge! It is good for another half-century of use! What other structural material can offer the true permanence that comes with steel—adaptability that defeats obsolescence—enduring strength—certain economy?

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AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.

The co-operative non-profit service organization of the structural steel industry of the United States and Canada. Correspondence is invited. 285 Madison Avenue, New York City.

Steel Insures Strength and Security

Yes—we should like you to mention THE AMERICAN CITY.

Sources of Information on Play and Recreation.—By Marguerita P. Williams, Department of Recreation, Russell Sage Foundation, New York. 1927. 94 pp. $1.

In this revised and enlarged edition of an old and valuable publication, effort has been made, according to the foreword by Lee F. Hanmer, Director of the Department, not so much to compile an exhaustive bibliography, as to select "a fairly comprehensive list of the most important and readily available books, pamphlets, reports and articles dealing with the many phases of recreation." Its intent is to "serve as a source book on those topics." The bibliography, listing over 1,200 titles, falls into 24 main subdivisions, including general works under such headings as: "Nature, Functions, and Value of Play"; "Leisure Time Problems"; "Layout, Construction, and Equipment of Play Facilities"; "Organization, and Administration of Public Recreation"; and under such specific headings as "Athletics and Sports"; "Physical Education"; "Swimming Pools and Public Baths"; and "Dramatics, Pageantry, and Festivals." In the collecting, analyzing, and presenting of this material, the author has used every means of giving the compilation the greatest possible working value. Effort has been made to exclude all out-of-print material, and to list periodical matter only where it is of a nature to be readily available in public libraries. Works are cross-referenced where expedient. Publishers' references and prices are given; and associations and periodicals in these fields are listed and their addresses given.

Reforestation in the Empire State.—The New York Development Association, Inc., devoted to the development, protection and utilization of the natural resources of New York State, has prepared this 16-page booklet, showing the need of reforestation and suggestions for carrying it out. (Apply to the Association, Watertown, N. Y.)

A Major Street Plan for Oakland, Calif.—A proposed plan for a system of major traffic highways, prepared for the Major Highway and Traffic Committee of One Hundred by Harland Bartholomew & Associates, city plan and landscape engineers, set forth in a book of 105 large pages, with many plans, diagrams and illustrations. It is divided into four parts, dealing respectively with basic studies the proposed plan, business district studies, and the execution of plans. (Apply to Harland Bartholomew & Associates, 317 North 11th Street, St. Louis, Mo.)

Souvenir Program, Oak Park, Ill.—The program of the celebration, November 11-13, of the 25th anniversary of the incorporation of Oak Park, a village of over 50,000 people, adjoining Chicago. An historical sketch of the community is included. 16 pp. 10 cents. (Apply to Dudley C. Meyers, Commissioner of Public Works, Oak Park, Ill.)

The Massachusets Tax Laws.—A 32-page pamphlet giving an abstract of the laws governing the raising and disposition of public revenue, and tables and charts showing the course of taxation in the last 12 years. (See page 166 of his issue.)

Improved Use of Streets, Alleys, and Sidewalks.—A series of bulletins from the Director of Traffic, Detroit Police Department, authorized by John C. Nagel, President, Common Council, designed to educate the public in conditions brought out in a recent traffic survey, in order that these conditions may be improved. Bulletin 1, issued December 5, 1927, gives the general features of the situation from the Police Department Traffic Survey Bureau Report. 2 pages mimeographed. (Apply to G. C. Schinck, Director of Traffic, Police Department, Detroit, Mich.)

The Holland Tunnel.—An attractive folder, issued jointly by the New York State Bridge and Tunnel Commission and the New Jersey Interstate Bridge and Tunnel Commission, contains toll rates, traffic regulations and other data relative to this newly opened tunnel, including plan, profile, and cross-section drawings. (Apply to Office of Superintendent, Administration Building, Canal and Varick Streets, New York.)

Prohibition: Its Industrial and Economic Aspects.—By Herman Feldman, Assistant Professor of Industrial Relations, Amos Tuck School of Administration and Finance, Dartmouth College. D. Appleton & Co., New York, 1927. 415 pp. $2.00

Both by questionnaires and by the compilation of a great variety of statistics this book delves into the tangled problem of prohibition, primarily in the effort to gage its effects upon the consumption of alcoholic drinks and of substitutes for them, upon purchasing power and upon production, both industrial and agricultural. A number of border-line aspects are also investigated, including industrial and automobile accidents, crime, drug addiction, and recreation. The author writes temperately, exhibiting research ability and a scholarly attitude. There is much data of civic, economic and sociological interest, and too positive interpretation has been avoided. The results of the studies are found on the whole to be favorable to prohibition, despite instability in certain statistical criteria; and it is predicted that the next few years are likely to show whether prohibition is achieving its purposes, or disintegrating. A portion of the book is based upon a questionnaire sent by THE AMERICAN CITY to mayors of small cities, the replies to which from 50 such places were analyzed by Professor Feldman in the April, 1927, number. Another questionnaire sent to employers of industrial labor elicited 350 replies, which were made use of extensively.

Experimental Studies of Water Purification, No. III: Discussion of B. Coli Results Obtained from Primary Experiments.—By H. W. Streeter, Sanitary Engineer, United States Public Health Service. This is reprint No. 1170, from the Public Health Reports, July 15, 1927, and relates to studies at the experimental water-purification plant constructed and under operation by the Public Health Service at Cincinnati, Ohio. 19 pp. (Apply to Superintendent of Documents, Government Printing Office, Washington, D. C.)

On Urbanity.—A 28-page booklet reprinted from the annual report of Dr. Elmer Ellsworth Brown, Chancellor of New York University, October, 1927, in which the functions of the urban university in times of changed political thought are discussed. Especial reference is made to the importance of correlating researches made in the departments of municipal governments with those carried on in scientific departments of universities. (Apply to New York University, University Heights, New York.)

Public Health Progress and Race Progress. —Are They Incompatible?—In this 16-page reprint from the Transactions of the 23rd Annual Meeting of the National Tuberculosis Association, 1927, Dr. H. S. Jennings, Director of the Zoological Laboratory, Johns Hopkins University, refutes statements that public health workers, social workers, and civilizers are saving the weak and unfit and thus undermining the race. Limited edition, 5 cents per copy. (Apply to the Association, 370 Seventh Avenue, New York.)

Active Immunization Against Diphtheria.—A 22-page article in the November, 1927, issue of *Public Health News* (New Jersey), discussing methods of administering toxin-antitoxin and the Schick test, and describing public immunization clinics. A state-wide campaign in New Jersey is based on the fact that diphtheria can be controlled and practically eliminated. The recommendations herein cover the recognized technique to this end, since many physicians who will be called upon in the campaign have little or no experience in such procedure. (Apply to State Department of Health, Trenton, N. J.)

The Place of the Hotel in the Modern City.—A 2-page reprint, from the *Pacific Coast Architect*, November, 1927, of an article in which Guy Wilfrid Hayler, city planner, shows that no scheme for community building is complete which fails adequately to solve the problem of appropriate hotels. He analyzes hotel statistics in western cities, and shows how chambers of commerce and other civic bodies are beginning to interest themselves in this subject. (Apply to the publication, 703 Market Street, San Francisco, Calif.)

New World Loose Leaf Atlas.—C. S. Hammond and Co., Inc., New York. Fifth Edition. 1927. 360 pp. + Postal Guide. 21 x 14 inches. $50 prepaid, including one year's map service.

This new edition of a standard atlas published since 1921, contains Physical and Economic Maps; Maps of the World Continents, and Countries; Historical Maps; and Maps of the States of the United States. Astronomical maps of the northern and southern hemisphere are included, as are also some ethnological and language maps. Its conveniently arranged, ready-reference indexes include an Index of the Principal Regions, Rivers, Waters, and Mountains of the World; a General Index of the Cities and Towns of the World; a Statistical Gazetteer of the World; and there are tables of the distances between the principal ports of the world. The Postal Guide of the United States is supplemented by a parcel post map and zone chart. The typography and charting of the maps are clear and easily legible, and their coloring is pleasantly decorative in effect. The binding is of heavy red buckram, with blue and gold illumination, and the adjustable mechanism holds the pages as firmly as if they were permanently bound.

Studies of the Efficiency of Water Purification Processes.—Public Health Bulletin No. 172, consisting of 423 pages, the first part, of 39 pages, being a presentation of results obtained from a preliminary study of Cincinnati and Louisville municipal plants. Part 2, of 135 pages, gives the result of the 1923-25 survey of 10 Ohio river municipal plants, Part 3, 51 pages, giving the same for 7 plants located elsewhere. There is a 3-page concluding discussion, followed by extensive appendices. $1. (Apply to Superintendent of Documents, Government Printing Office, Washington, D. C.)

The Community Builder.—A new monthly magazine of which Carol Aronovici is the editor, dealing with city, rural and regional planning. The first number, dated December, 1927, contains 46 pages and includes articles on various cities, subdivisions, civic centers, downtown parking, etc. It is attractively illustrated. 35 cents a copy; $2.50 a year. (Apply to Community Builder Publishing Co., 825 Union League Building, Los Angeles, Calif.)

Salaries of County Officials in Wisconsin, 1927.—Information Report No. 61 of the Municipal Information Bureau, University of Wisconsin, compiled by Lorna L. Lewis, Librarian, giving salaries by counties, and an analysis. 15 pp. (Apply to the Bureau, Madison, Wis.)

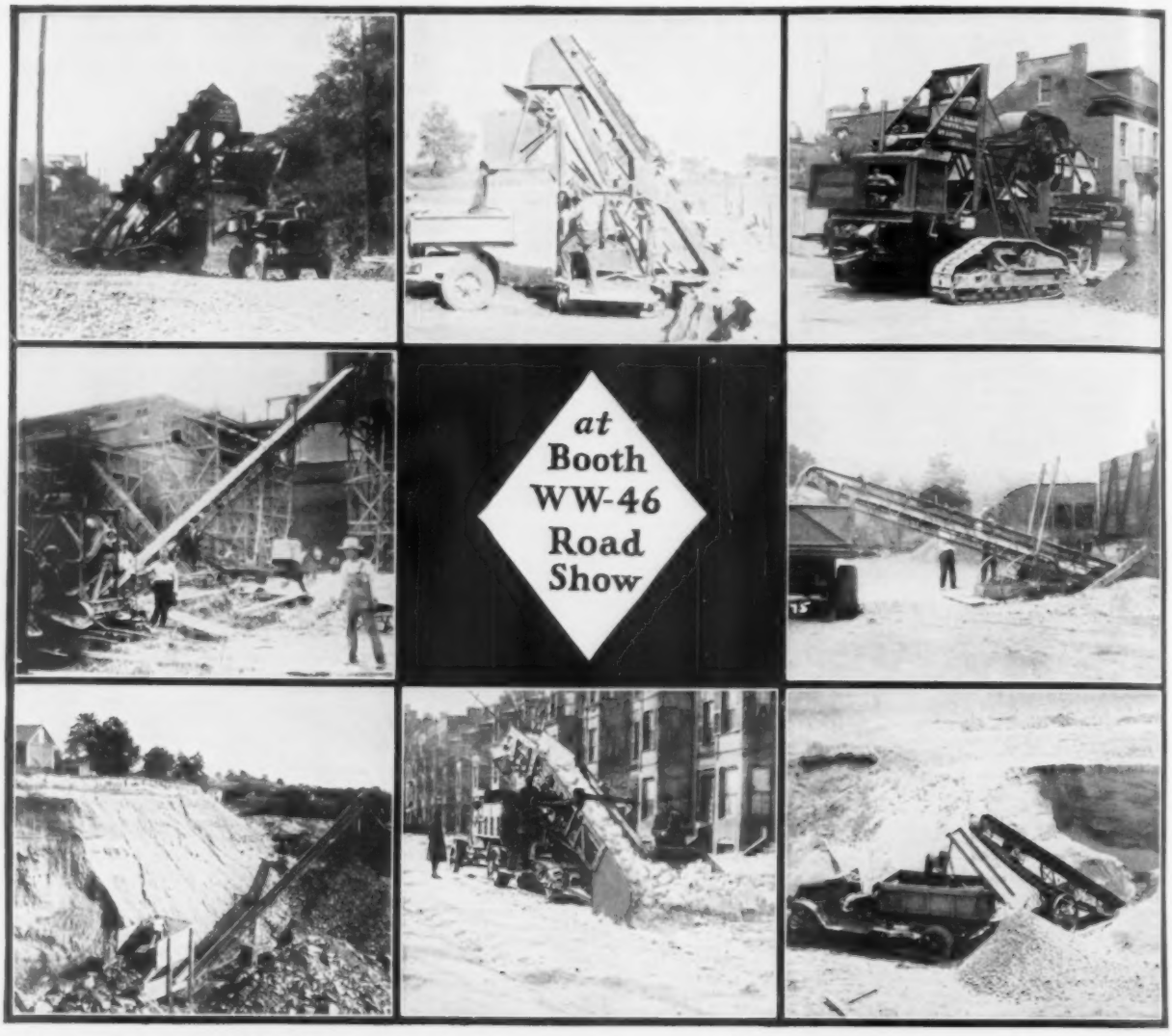
1927 Report of Committee on Street Lighting, Illuminating Engineering Society: Part II.—The tentative statement of principles of street lighting, presented by the Committee at the 28th Annual Convention of the Society, and reprinted for distribution by the Street Lighting Department of the Holophane Co. 12 pp. (Apply to Holophane Co., Newark, Ohio.)

Appraisal Specifications.—A 4-page pamphlet of standard specifications covering municipal tax appraisal work as developed and executed by the J. M. Cleminshaw Co., specialists in the appraisal of municipalities for local tax purposes. (Apply to J. M. Cleminshaw Co., Cleveland, Ohio, or Columbus, Ohio.)

Administration of Private Social Service Agencies.—A topical bibliography by W. W. Burke of the Faculty of the Graduate School of Social Service Administration, University of Chicago. It was published in the March and June numbers of the *Social Service Review*, and is reprinted as a 41-page pamphlet, including a supplement bringing it up to date of June, 1927. The longer articles from periodicals are included, together with books, etc.; many brief articles have been omitted. 75 cents. (Apply to University of Chicago Press, Chicago, Ill.)

The General Bonded Debt (Buffalo, N. Y.)—A memorandum on the liquidation of the general bonded debt of Buffalo, prepared by the Municipal Research Bureau of that city, and presented in a 10-page mimeographed booklet, with 8 printed tables. It is addressed to the Commissioner of Finance and Accounts. (Apply to the Bureau, White Building, Buffalo, N. Y.)

FASTER THAN MEN AND FAR, FAR CHEAPER



Whether or not 1928 will be a banner year for the construction industry cannot be positively foretold.

But most assuredly, competitive conditions will be more severe than ever.

The vigor of the resulting fight for profits will undoubtedly make obsolete, existing equipment that cannot meet the strict demands of close-margin bids. And new methods will, of necessity, call for closer scrutiny.

Making History for '28 and New Low Costs

Because of these things visitors to the Cleveland Road Show will find matters of increasing interest at the Barber-Greene Booth. New methods will be demonstrated that can help your handling costs to new low levels.

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Manual for Small Museums.—By Lawrance Vail Coleman, Executive Secretary of the American Association of Museums. G. P. Putnam's Sons, New York. 1927. XIV + 395 pp. $5.00.

The primary use of this book is stated to be for those concerned with the founding of museums or the building-up of small museums now existing. Although particularly for the smaller institutions, of which there are several hundred, apart from those connected with colleges, it deals with a wide range of subjects that concern all museums, taking them from their simplest beginnings, and thus serves as a handbook for large museums also. It is based in part upon a coast-to-coast survey of museums begun three years ago, and is prompted by observation of rapid growth in museum-making and the need of comprehensive information. The contents include grouping of chapters under Organization, Administration, Curatorial Work, Educational Work, Research and Building; the last includes the basic architectural requirements of museums, and their growth from small initial units. In the appendices are models for charter, constitution and by-laws; legal matters; and directories of museums and dealers. Bibliographies on various topics occur throughout the book. There are many illustrations of buildings and equipment.

Are City Expenditures Too High?—In an 8-page brochure on this subject, reprinted from the magazine *Philadelphia*, published by the Philadelphia Chamber of Commerce, Frederick Uthoff shows that municipal expenditures have only apparently shown a general increase since 1913; and that where actual increases have occurred, they have been justifiable and inevitable. (Apply to Portland Cement Association, 33 West Grand Avenue, Chicago, Ill.)

American Child Health News.—A new clip-sheet service furnished by the American Child Health Association to Child Hygiene Divisions of states, and released by them to the press "when and as news is available." (Apply to the Association, 370 Seventh Avenue, New York.)

Fifteenth Annual Report of the Chief of the Children's Bureau to the Secretary of Labor.—This 42-page report for the fiscal year ending June, 1927, contains sections on maternity and hygiene, child hygiene, child labor, delinquency and child welfare, studies of dependent children, state and county child-welfare, recreation, reports on certain state activities, etc. 10 cents. (Apply to Superintendent of Documents, Government Printing Office, Washington, D. C.)

Some Public Health Service Publications Suitable for General Distribution.—A 13-page bibliography in *Public Health Reports*, December 2, 1927 (Vol. 42, Number 48), issued by the United States Treasury Department, Public Health Service, containing non-technical publications of that service covering a wide range of subjects and suitable for general distribution. Material is listed under such heads as Keep Well Series; Supplements to Public Health Reports; Public Health Bulletins; Miscellaneous; and Venereal Disease Publications. Many of the publications are free; others cost a few cents. (Apply to Superintendent of Documents, Government Printing Office, Washington, D. C., for list.)

National Advertising and Publicity.—A paper by Don E. Mowry, General Secretary of the Association of Commerce, Madison, Wis., presented at the annual meeting of the National Association of Commercial Organization Secretaries, October 25, 1927. It deals with successful methods employed by chambers of commerce for the purpose stated. 21 pp. (Apply to Association of Commerce, Madison, Wis.)

University of Virginia Institute of Public Affairs.—The complete program, as well as the aims and objects of the first Institute of Public Affairs held at the University of Virginia (August 8-20, 1927), together with a compilation of press opinions as to the significance and values of the gathering, constitute Volume 1, Number 2 of the *Summer Quarterly Bulletin* of the University (September, 1927). Announcement is made of a second Institute for 1928. (Apply to the Institute, Box 149, University, Va.)

The Income and Standard of Living of Unskilled Laborers in Chicago.—By Leila Houghteling, Ph. D. The University of Chicago Press, Chicago, Ill. 1927. XVII + 224. $2.60, postpaid.

A practical and detailed study of family budgets by a late member of the faculty of the Graduate School of Social Service Administration of the University of Chicago, the author having completed the manuscript before her death on January 1, 1927. The field work was done prior to August 1, 1925. The investigation was to ascertain facts in regard to the standard of living found in the families of unskilled laborers in Chicago in order to judge whether the estimates in the 1925 revision of the Chicago Standard Budget set too high a standard for dependent families who were being supported by relief agencies; the conclusion was in the negative. The inquiry was under the auspices of a committee representing the Chicago Council of Social Agencies, the University of Chicago, and certain large employers of labor. About one-half the families studied, with the benefit of continuous employment, attained the standard.

State Regulation of Public Utilities in Illinois.—By Charles Mayard Kneier, Ph. D., University of Illinois, Urbana, Ill. 1927. 266 pp. Paper, $1.50.

This study is No. 1 of Vol. XIV of the University of Illinois Studies in the Social Sciences and relates primarily to regulation from 1914, when the Illinois Public Utilities Commission was established, to 1926. The law, the personnel, the operations and the policies of the Commission, including its attitude on many phases of valuation, rate-making and regulation of service, are gone into, in a painstaking and scholarly way. Interesting tables in an appendix show the lapse of time in important cases, and comparisons of valuations by companies, public representatives, and the Commission.

Housing in Philadelphia.—Annual report of the Philadelphia Housing Association for the year 1926, by Bernard J. Newman, Director and Secretary. 64 pages, illustrated, describing sanitary inspection work, new housing construction, the apartment situation, rents and other phases of the subject. (Apply to the Association, 311 South Juniper Street, Philadelphia, Pa.)

The Purification of Water.—This pamphlet, "conceived with a view to promoting a better understanding of the problems involved in the purification of domestic water-supplies," discusses filtration, water softening, iron and manganese removal, and laboratory control. It shows the importance of the consulting chemist, and gives the history of purification plants in a group of American cities. A substantial 32-page booklet, copiously illustrated with photographs and charts, designed to advertise the services of Burns and McDonnell Engineering Co., Kansas City, Mo., and Los Angeles, Calif., and containing general information of value for municipal engineers and water-works officials. (Apply to the company, 402 Interstate Building, Kansas City, Mo.)

Report of a Survey of Transportation on the State Highway System of Ohio.—This study, just published, contains the results of highway traffic research conducted cooperatively by the Bureau of Public Roads, the United States Department of Agriculture, and the Ohio Department of Highways and Public Works, during 1925. The study was made to ascertain essential facts concerning traffic conditions as a basis for the further development of the Ohio highways system. It comprises (1) a summary of principal conclusions; (2) detailed data; and (3) the proposed program of state highway improvements as endorsed by the Bureau of Public Roads and the State Department of Highways and Public Works. 156 pp., illustrated with photographs, graphs, and maps. (Apply to Ohio Department of Highways and Public Works, Columbus, Ohio.)

A Tale of Two Cities.—A 20-page booklet issued by the City Charter Campaign Committee, Cincinnati, Ohio, gives sharply contrasting pictures of that city's administration in its various departments prior to the coming of the Charter Administration, and to-day. (Apply to the Committee, 534 Walnut Street, Cincinnati, Ohio.)

Federal Health Administration in the United States.—By Robert D. Leigh, A. Barton Hepburn Professor of Government, Williams College. Harper & Brothers, New York. 1927. 687 pp. $5.00.

The services of the national health agencies in the United States, as distinguished from the public health services of states, counties and municipalities, are the particular concern of this book; but a very considerable dependence of the former upon the latter is acknowledged, and the greater part of the first chapter, on "Evolution of American Public Health Organization," is given over to the development of the state and local agencies. The powers under which the national services operate are described, the medical care of the army, navy, veterans, seamen, Indians, territorials, Federal employees and prisoners, etc., is treated in several chapters, followed by the more general aspects of Federal work in quarantine, health regulation, scientific investigation, education and stimulation, with discussions of centralization and reorganization.

Recreation Facilities, Des Moines, Iowa.—Two publications, Des Moines, one being entitled "Recreation Facilities, Existing and Proposed," a substantial 62-page publication embodying the recreational plan as made by Harland Bartholomew, City Plan Engineer, of St. Louis, and Earl O. Mills and L. D. Tilton Associates, and approved by the City Council. The study is in three parts: 1, A Review of the Composition and Character of a Modern Recreation System; 2, A Study of Existing Facilities and Needs in Des Moines; and, 3, an Appendix including a valuable scoring schedule for public parks. The other, entitled "A Brief Outline of the Plan for the Systematic and Economical Development of Recreational Facilities for Des Moines, Iowa," a 14-page brochure, presents in popular form the substance of the report for the purpose of educating the public of Des Moines to existing conditions in this field. Both are illustrated with maps, graphs, and charts. (Apply to City Plan Commission, Des Moines, Iowa.)

Automotive Headlighting.—"Effect of Wet Roads on Automotive Headlighting" (8 pp.), by R. E. Carlson and W. S. Hadaway, "Head-Lamp Focusing Mechanisms and How They Affect Law Enforcement" (7 pp.), by Alfred W. Devine and "Head-Lamp Adjusting Mechanisms and Law Enforcement" (24 pp.), by Walter W. Matthews. These three papers presented at the Headlight Session of the summer meeting, Society of Automotive Engineers, were printed in the *Journal* of the Society, issues of June, July, and September, 1927, respectively, and are now available in reprint form. Incorporated with the paper by W. W. Matthews is the discussion by C. C. Bohner, President of the Tung-Sol Lamp Works, of the fixed-focus head-lamp, and also discussion of the other papers. (Apply to the Society of Automotive Engineers, 29 West 39th Street, New York.)

Special Assessment Accounting.—Increased special assessment work and the lack of standardized practice give timeliness to this 11-page bulletin (No. 21) of the Illinois Municipal League, by Lloyd Morey, C. P. A., Professor of Accountancy, University of Illinois, and Benjamin F. Langworthy, attorney, of Chicago. Four pages consist of forms. (Apply to the League, Urbana, Ill.)

Special Assessment Procedure.—A report on the nature and extent of special assessments for improvements in 24 large cities, and on methods employed in applying them. It is a valuable summary and analysis of information obtained, chiefly by questionnaires, from these cities by the Kansas City Public Service Institute. 87 mimeographed pp. November, 1927. (Apply to the Institute, 501 Orear-Leslie Building, Kansas City, Mo.)

For the Good of San Francisco.—A review of the history and accomplishments of the Down Town Association of San Francisco, in the twenty years since its formation, just after the fire and earthquake of twenty years ago, by downtown merchants, for the purpose of hastening rehabilitation of the central business district. 20 pp. (Apply to the Association, 85 Post Street, San Francisco, Calif.)

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The Billboard Blight.—The *American Magazine of Art* for November carries four striking photographs under the heading, "The Billboard Blight in Our Country—Can It Be Cured?", an article by W. H. Chamberlain on "How Bermuda Killed the Billboard Blight," and an article entitled, "Billboards and the Landscape in the U. S. A.," dealing with efforts of the American Federation of Arts to obtain the cooperation of national advertisers in restricting billboard advertising. 25 cents. (Apply to American Federation of Arts, Barr Building, Farragut Square, Washington, D. C.)

Ordinances Governing and Relating to Bureau of Streets of Chicago.—A 94-page booklet containing ordinances about work on and under streets, limitations on use of streets, the removal of waste, buildings with relation to streets, traffic regulations, and other matters coming under the title as given. (Apply to Municipal Reference Library, 1005 City Hall, Chicago, Ill.; 3 cents postage.)

Vocational and Educational Guidance in Junior and Senior High Schools.—An outline of this work as provided for in the New York State Education Law, and the laws and regulations of the University of the State of New York (the state department of education), prepared by George E. Hutcherson, Supervisor of Industrial Arts Education, and presented in the *Bulletin* of the University for November 1, 1927. 29 pages. (Apply to the University of the State of New York Press, Albany, N. Y.)

Elimination of Waste—Simplified Practice—Paving Bricks.—Simplified practice recommendation No. 1 of the United States Bureau of Standards. A 24-page booklet comprising the fifth and sixth revisions; effective date, May 1, 1927. 5 cents. (Apply to Superintendent of Documents, Government Printing Office, Washington, D. C.)

Map of Existing Open Spaces in Massachusetts.—A folded map, 4 x 2½ feet, compiled by the Committee on Needs and Uses of Open Spaces, showing by a code of various colors the state park reservations, metropolitan city and town parks, state forests, city and town forests, water-supply lands, state institutions and properties, and municipal and semi-public institutions, on the topographic base map of the United States Geological Survey. (Apply to the Committee, 9 Park Street, Boston, Mass.)

Rat Control.—Farmers' Bulletin No. 1533 of the United States Department of Agriculture. Prepared by James Silver, Assistant Biologist in the Division of Economic Investigations. It gives many suggestions for dealing with rats on the farm and in the city. 20 pp. (Apply to the Department of Agriculture, Washington, D. C.)

Fireproof Specification.—The American Institute of Steel Construction appointed six prominent engineers who have spent months of intensive study in developing a fireproofing specification from a relatively new standpoint defined as "rational." Available in 16-page booklet form. (Apply to the Institute, 285 Madison Avenue, New York.)

Improving Truck Traffic.—Truck accidents can be reduced: truck insurance can be lowered. The National Automobile Chamber of Commerce demonstrates these facts in a 32-page bulletin which describes methods for diminishing motor vehicle accidents from a study of what happened in Hartford, Connecticut. The bulletin, which "attempts only to show truck owners and operators how to reduce accidents," is copiously illustrated with drawings, maps and diagrams. (Apply to National Automobile Chamber of Commerce, 366 Madison Avenue, New York.)

Salaries and Staff of Municipal Engineering Departments in New Jersey.—A report (No. 191) of the Bureau of Municipal Information of the New Jersey State League of Municipalities, consisting of 5 mimeographed pages and giving information as to salaries or the basis for fees, provision for office space and equipment, proportion of time required, and size of staff, for municipal engineers, and budget appropriations for the engineering department, in New Jersey cities. (Apply to the Bureau, 34 West State Street, Trenton, N. J.)

Other Reports and Booklets Received

CHAMBERSBURG, PA.—Annual report, Chamber of Commerce, to October, 1927, including school survey.

CHICAGO, ILL.—Report of Pension Committee, City Council, August, 1927.

CORAL GABLES, FLA.—Descriptive booklet. Chamber of Commerce. 32 pp.

DAYTON, OHIO.—Annual report, 1926. 48 pp.

FRANKLIN, PA.—Descriptive booklet. Chamber of Commerce. 16 pp.

HAWAII.—Report of Superintendent of Public Works, June 30, 1927.

LOS ANGELES, CALIF.—Statement of Audit, year ending June 30, 1927, Bureau of Power and Light, by Price, Waterhouse & Co. 10 pp.

MOOSE JAW, SASK.—Audit of Accounts and City Commissioners' Report, 10 months ending October 31, 1927.

NEW JERSEY.—A Partial Record of Two Years: State Chamber of Commerce, Newark, N. J. 12 pp.

SEATTLE, WASH.—Annual Report, Fire Department, 1926. 91 pp.

TACOMA, WASH.—Annual Report, Metropolitan Park District, 1926. 10 pp.

Conventions—When and Where

JANUARY 9-10.—DETROIT, MICH.
International Association of Street Sanitation Officials. Annual convention. Secretary, A. M. Anderson, 10 South LaSalle Street, Chicago, Ill.

JANUARY 9-11.—WASHINGTON, D. C.
American Engineering Council. Annual meeting. Executive Secretary, L. W. Wallace, 26 Jackson Place, Washington, D. C.

JANUARY 9-13.—CLEVELAND, OHIO.
American Road Builders' Association. Annual Convention and Road Show. Secretary, Ethel A. Birchland, Earle Building, Washington, D. C.

JANUARY 12-13.—GRAND ISLAND, NEB.
League of Nebraska Municipalities. Annual meeting. Secretary, J. H. Hale, 1304 Fifth Street, Kearney, Neb.

JANUARY 12-14.—RIVERSIDE, CALIF.
California Association of Commercial Secretaries. Annual convention. Secretary, Theodore Grady, Jr., Monterey, Calif.

JANUARY 18-20.—NEW YORK.
American Society of Civil Engineers. Annual meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

JANUARY 19.—LYNCHBURG, VA.
Virginia State Chamber of Commerce. Annual meeting. Managing Director, R. LeRoy Hodges, 708 Grace-American Building, Richmond, Va.

JANUARY 19-20.—MANHATTAN, KANS.
Kansas Engineering Society. Annual meeting. Secretary, J. M. Averill, Route 7, Topeka, Kans.

JANUARY 19-21.—LOUISVILLE, KY.
American Water Works Association, Kentucky-Tennessee Section. First meeting. Secretary, F. C. Dugan, 532 West Main Street, Louisville, Ky.

JANUARY 23-27.—WEST BADEN, IND.
Associated General Contractors of America. Annual convention. Secretary, Colonel D. H. Sawyer, 1150 Munsey Building, Washington, D. C.

JANUARY 23-28.—HOUSTON, TEXAS.
Southwest Water Works Association, Texas Section. Annual Short School. Address L. A. Quigley, Fort Worth, Texas.

JANUARY 25-26.—CHICAGO, ILL.
National Paving Brick Manufacturers Association. Annual meeting. Secretary, E. L. Beller, 332 South Michigan Avenue, Chicago, Ill.

FEBRUARY 3.—NEWARK, N. J.
New Jersey State League of Municipalities. Annual convention. Secretary, Sedley H. Phinney, 34 West State Street, Trenton, N. J.

FEBRUARY 8-10.—WATERLOO, IOWA.
Iowa Engineering Society. Annual meeting. Secretary, John S. Dodds, Ames, Iowa.

FEBRUARY 13-17.—NEW YORK.
American Institute of Electrical Engineers. Winter convention. Secretary, F. L. Hutchinson, 33 West 39th Street, New York.

FEBRUARY 14-16.—LAWRENCE, KANS.
Kansas Water Works Association. Annual convention and three-day Water Works School. Secretary-Treasurer, Prof. E. A. Boyce, State Board of Health, Lawrence, Kans.

FEBRUARY 15-17.—ATLANTIC CITY, N. J.
Association of Highway Officials of North Atlantic States. Fourt annual convention. Secretary and Treasurer, A. Lee Grover, Trenton, N. J.

FEBRUARY 20-21.—WASHINGTON, D. C.
Association of Community Chests and Councils. Citizens Community Conference. Executive-Director, Allen T. Burns, Graybar Building, Lexington Avenue at 43d Street, New York.

FEBRUARY 21-24.—WICHITA, KANS.
Southwest Road Show and School. Secretary-Treasurer, F. G. Wieland, Wichita, Kans.

FEBRUARY 23-24.—DENVER, COLO., AND FEBRUARY 25.—PUEBLO, COLO.
American Water Works Association, Rocky Mountain Section. Annual meeting. Secretary, Dana E. Kepner, State Board of Health, 420 State Office Building, Denver, Colo.

FEBRUARY 23-25.—TORONTO, ONT.
Ontario Good Roads Association. Annual meeting. Secretary, W. S. Squire, Toronto, Ont.

FEBRUARY 25-MARCH 1.—BOSTON, MASS.
National Education Association, Department of Superintendence. Annual meeting. Secretary, S. D. Shankland, 1201 16th Street, N. W., Washington, D. C.

FEBRUARY 28-MARCH 1.—PHILADELPHIA, PA.
American Concrete Institute. Annual convention. Secretary, Harvey Whipple, 2970 West Grand Boulevard, Detroit, Mich.

MARCH 8-10.—LEWISTOWN, MONT.
American Water Works Association, Montana Section. Annual meeting. Secretary, Herbert B. Foote, Division of Water and Sewage, State Board of Health, Helena, Mont.

MARCH 23-24.—TRENTON, N. J.
New Jersey Sewage Works Association. Annual meeting. Secretary, John R. Downes, Bound Brook, N. J.

APRIL 17-19.—ATLANTA, GA.
Southeastern Water and Light Association. Secretary, W. F. Stieglitz, Columbia, S. C.

APRIL 19-21.—JACKSONVILLE, FLA.
Florida Engineering Society. Annual meeting. Secretary, J. R. Benton, Gainesville, Fla.

MAY 7-10.—DALLAS, TEXAS (TENTATIVE).
National Conference on City Planning. Annual conference. Secretary, Flavel Shurtleff, 130 East 22d Street, New York.

MAY 7-10.—ATLANTIC CITY, N. J.
National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 40 Central Street, Boston, Mass.

MAY 7-11.—WASHINGTON, D. C.
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

JUNE 8-9.—BALTIMORE, MD.
American Association for Promoting Hygiene and Public Baths. Annual meeting. Secretary, Hildergarde M. Rosen, 139 West 96th Street, New York.

JUNE 11-16.—SAN FRANCISCO, CALIF.
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 170 Broadway, New York.

JUNE 13-15.—BRAINERD, MINN.
League of Minnesota Municipalities. Annual convention. Acting Executive Secretary, Harvey Walker.

JULY 2-7.—PARIS, FRANCE.
International Federation for Housing and Town Planning. Congress. Organizing Secretary, H. Chapman, 25 Bedford Row, London, W. C. 1, England.

OCTOBER 1-5.—ATLANTIC CITY, N. J.
Playground and Recreation Association of America. Annual convention. Secretary, H. S. Braucher, 315 Fourth Avenue, New York.

OCTOBER, FIRST TWO WEEKS.—SEVILLE, SPAIN.
International Federation of Local Government Associations (formerly International Congress of Cities). Director, E. Vinck, Rue de la Regence, Brussels, Belgium.

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WE moderns who appreciate the niceties of life and endeavor to achieve an expression of refined taste and individuality in our homes, and in our commercial and civic buildings, recognize in marble the economical answer to our purpose . . . with the added satisfaction of knowing that modern machinery and methods have made marble, today, much more readily procurable than formerly. In fact, judged coldly from the standpoint of durability and maintenance costs, marble is actually the most economical of all interior finishes. Additionally, for character and cultural appeal - - -

There is No Substitute for Marble

The de luxe booklet, "The Everyday Uses of Marble," shown on the left, is a most interesting presentment—in picture and text—of facts relating to the many practical applications of marble to home and commercial treatments. A copy is yours for the asking—sent upon request, and without obligation, of course. Address Department 11-A.

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NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

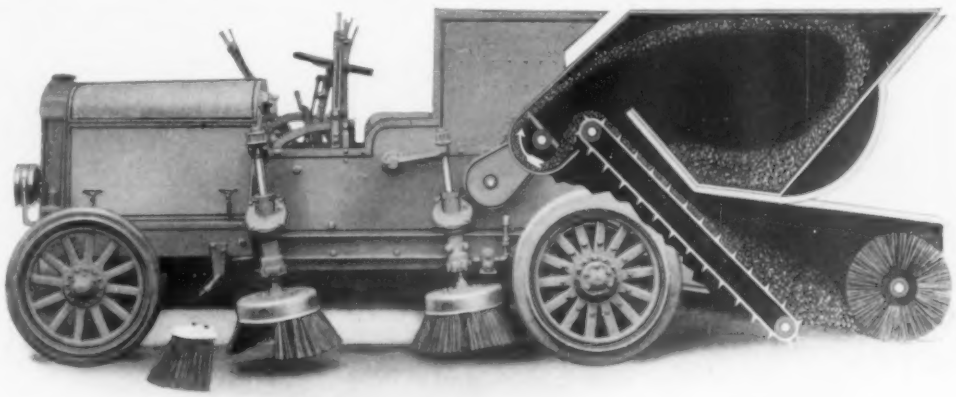
Sweeping the Holland Tunnel Roadway

The New York and New Jersey Bridge and Tunnel Commission, which has been responsible for the construction of the Holland Tunnel, opened to vehicular traffic under the Hudson River between New York and New Jersey on November 13, left no stone unturned to test materials used in building the tunnel and the equipment for its operation. After a careful study of all types of street-cleaning equipment, the Commission placed an order with the Kinney Manufacturing Co., Boston, Mass., for a Kinney pick-up sweeper for use in the two tubes comprising the Holland Tunnel. It was erroneously reported in these columns several months ago that another type of cleaning equipment had been purchased.

The Kinney pick-up sweeper is built on principles radically different from those heretofore embodied in the design and construction of pick-up sweepers. By placing the sweepings in a narrow windrow, it is possible to use a 4-foot-wide pick-up broom which, on account of its short length and its being made of tempered steel wire, will last many times longer than brooms of greater length made of other material. The use of steel brushes relieves the users of sweepers of the continual expense and delay in the frequent renewal of the brushes. A large portion of the street is swept by the rotary brushes, which rotate in a direction at right angles to the travel of the machine. This allows the brushes to enter and clean out cracks and crevices in the pavement, including brick or cobble stone surface.

The principle of operation of this machine is as follows: The forward rotary brooms are carried over the street in such a manner as to sweep the dirt inward from both sides toward the center of the machine. They are so arranged as to cover a space 9 feet wide and place the material in a windrow 6 feet wide. The two intermediate rotary brooms then take up this material and place it in a windrow approximately 3 feet wide. The pick-up broom then follows and throws the sweepings onto the elevator, by which they are conveyed to the storage body. By placing the sweepings in a narrow windrow, it is possible to use a 4-foot-wide pick-up broom.

The special economy of upkeep claimed for the Kinney motor sweeper is largely on account of the steel disc brushes, as it is possible to do more sweeping per dollar of broom cost. The five brooms have independent adjustment, so that they can be readily set to conform to the curvature of any road.



KINNEY SWEEPER, SHOWING CUT-AWAY OF PICK-UP BROOM, ELEVATOR AND STORAGE DUMP-BODY

A Motor Roller with Duplex Worm Drive

A new 10-ton, 4-cylinder motor roller with modern streamline design and duplex worm gear drive has been announced by The Austin-Western Road Machinery Co., 400 North Michigan Avenue, Chicago, Ill. This new machine has been designed especially for utility and efficiency. It affords the operator unobstructed view of both front and rear rolls and shields the motor and its component parts from dust, the weather and thievery.

The outstanding feature of the Autocrat, as the roller is called, is the duplex worm gear drive, by means of which the power of the modern, heavy-duty 4-cylinder motor is transmitted to the clutches, and thence to the rear axle. This worm drive is a new application so far as road rollers are concerned and is different from ordinary worm drives in two respects. The worm gear spiders are fitted to quills, or hollow shafts, carried on Timken tapered roller bearings placed within the gear housing. Within the quills are shafts carrying spur drive pinions on one end, and, on the opposite end, the hubs which carry half the discs of the Twin Disc clutches. The quills on which the worm gears are mounted carry the other clutch discs, and in consequence one of the clutches is engaged—which automatically disengages the other—power is transmitted through one of the worm gears to one of the spur pinions, while the other spur pinion and its shaft rotate freely within the other quill. Both pinions mesh with a common driven gear and, as the change speed gears are located between this common driven gear and the main drive gear on the rear axle, it follows that there will be the same traveling speeds forward and reverse—a necessary feature in a road roller which is working backward just about as much as forward. Furthermore, it also follows that it is not necessary to shift gears in order to change from forward to reverse or vice versa. Instead, the operator simply disengages one clutch and engages the other, which is done with the utmost ease and speed, and the roller changes direction almost instantly.

Other distinctive features of the new equipment are: an electrically operated, self starter, actuated by a button on the

Resurfaced with Trinidad right over old granite blocks!

In 1923 when the old granite block pavement on Maumee Avenue, Toledo, Ohio, got in such bad shape that it was absolutely necessary to give it more than ordinary attention, it was resurfaced with Trinidad Native-Lake Asphalt.

That made it a modern smooth-surface street at *half the usual cost* and with practically no interruption to traffic. A street that is noted for its long-lasting, low-cost service. A street that is attractive, resilient, free from noise, and easy to keep clean and repair.

Trinidad Lake Asphalt is a native-lake product, possessing qualities which cannot be put into artificially-produced substitutes. And it is equally as desirable for resurfacing brick, concrete, macadam, or stone pavements as for new street construction.

We also supply Bermudez Road Asphalt—another native-lake product—for *road* building. Write for interesting data.

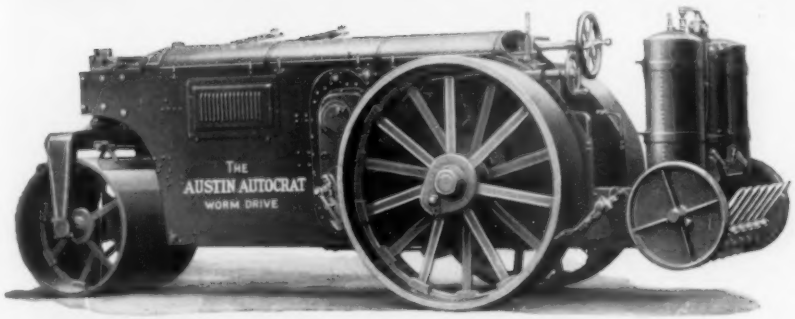
The Barber Asphalt Company
Philadelphia

New York Chicago Pittsburgh St. Louis Kansas City San Francisco

Dug from the surface of Trinidad Asphalt Lake

TRINIDAD LAKE ASPHALT

Yes—we should like you to mention THE AMERICAN CITY.



THE NEW AUSTIN ARISTOCRAT GASOLINE ROAD ROLLER

control panel; an enclosed differential gear; oil and gasoline gages and all electrical controls are mounted on a panel directly in front of the operator's station, while all clutch, steering, gear shift and brake controls are also close at hand.

The motor is the heavy-duty Buda B.T.U. with 5-inch bore and 6½-inch stroke, giving 55 actual brake horsepower at 1,000 r.p.m., with extra-large bearings and heavy, heat-treated crankshaft drilled for force-feed lubrication.

The pneumatic scarifier attachment is simple in design, strong in construction, and very easy to operate. It consists primarily of an air-compressor mounted on a plate directly over the engine flywheel housing, and driven by a belt from a pulley bolted to the pinion on the upper of the two-clutch shafts. This compressor supplies air to two heavy steel 16 x 36-inch receivers, which conform to all state and federal specifications, and are mounted at the rear of the operator's platform. Air from these receivers is supplied to a cylinder mounted between them, and its force applied to the scarifier teeth or tynes by means of the one-piece tyne holder, a heavy steel casting which is attached to the lower end of the cylinder piston through the medium of a strong steel connecting rod. Downward pressures of the air on the piston forces the teeth into the ground and holds them there, while by simply reversing the pressure and applying it to the lower face of the piston, which is of the trunk type, they are quickly raised.

A Snow-Plow Made by Heil

A snow-plow which may be installed on any truck of two tons capacity or larger in about two hours' time, is announced by the Heil Co., Milwaukee, Wis. This Gettelman Speed Plow is the result of years spent in the development of the highway and street snow-removal problems.

The scraper blade is 38 inches high and is built in 9- or 10-foot lengths. Tubular push arms are attached to the front axle with a universal axle attachment and the arms telescope so that the angle of the blade may be adjusted to throw to either side of the road. One of the distinctive features of this equipment is the tripping action of the blade. When the blades hit obstructions which would damage an ordinary plow, it pivots on the pusher arm attachment toward the horizontal position until it passes the object. Springs then bring it back to the operating position. In the cab a wheel on the end of the control rod provides means of raising the plow to a carrying position.

Robinson & Steinman Move New York Offices

Robinson & Steinman, consulting engineers, New York, have announced the removal of their offices to the Roebling Building, 117 Liberty Street, New York.

Fifty Years of Valve Manufacturing

The fiftieth anniversary of the Kennedy Valve Manufacturing Co., Elmira, N. Y., is being celebrated this year. In 1877, Daniel Kennedy started to make valves in a little shop on one of the floors of a four-story building on Gold Street in lower Manhattan, New York. The Kennedy business has developed until now there are two large plants occupying 35 acres. Throughout each step in the manufacture of Kennedy valves, pipe fittings and fire-hydrants, thorough analytical and physical tests are made to maintain high quality of material. The workmanship is also guarded in every possible way against imperfection. After machining, additional tests are made under more exact conditions than will occur in service and with valves or fire-hydrants in both opened and closed positions.

Following the final test and inspection, the finished products are delivered to the warehouse or shipping department, where they are loaded directly onto railroad cars from floors on the same level as the car floors.

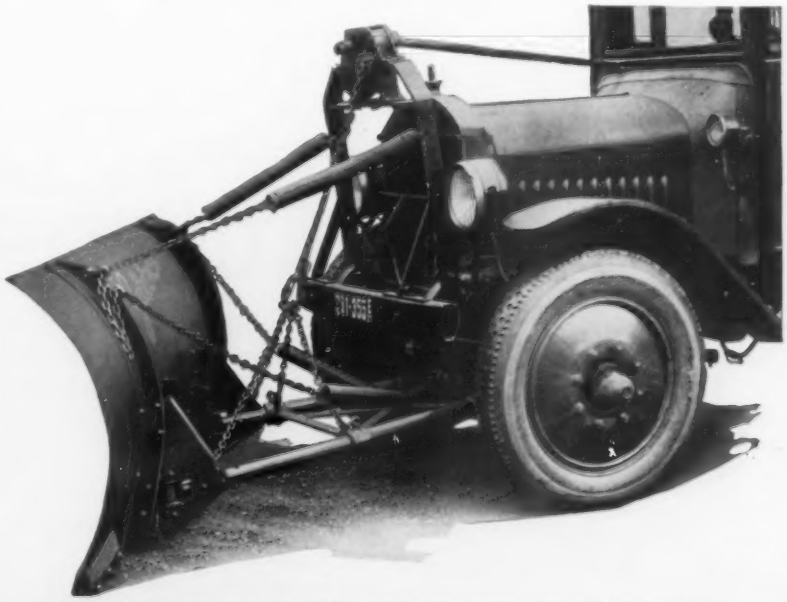
Every foundry operation from making cores to cleaning rough castings is performed with modern labor-saving machines, materials and material-handling devices. The machine shops are equipped with boring mills, planers, lathes, multiple drills and sufficient tools of great variety for all machining and finishing operations on valves weighing up to 45,000 pounds each.

Silver Joins Advertising Agency

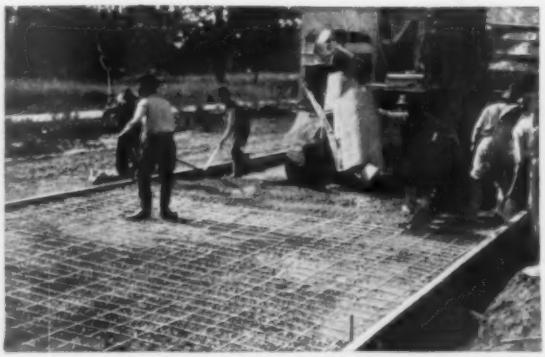
Ralph R. Silver, for the past twelve years Advertising Manager of the American Cast Iron Pipe Co., Birmingham, Ala., is now associated with the Cox Advertising Agency of that city. Under plans of reorganization Mr. Silver will acquire a substantial interest in this well-known advertising firm. Mr. Silver, who was also Assistant Secretary and a member of the Board of Directors of the American Cast Iron Pipe Co., is widely known in the water-works industry, his connection with the pipe business having brought him in contact with water-works men in all sections of the United States.

Solvay Now Selling Liquid Chlorine

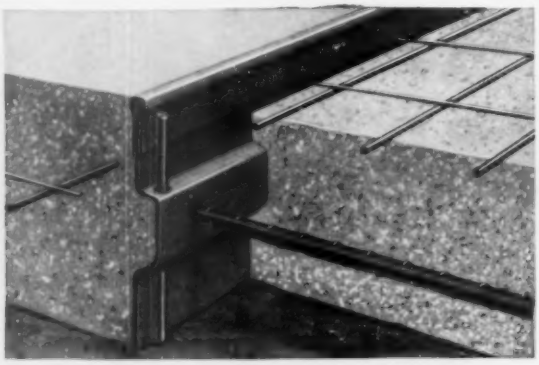
The Solvay Process Co., Syracuse, N. Y., and Solvay Sales Corporation, 40 Rector Street, New York, have announced that liquid chlorine of high quality is now being manufactured and sold by these organizations, respectively. The introduction of this liquid chlorine marks another step in the expanding market activities of The Solvay Process Co. Distribution plants have been perfected, and Solvay liquid chlorine is now available for immediate delivery in tank cars or multiple unit cars suitable to the general demands of the trade. Under these arrangements spot or contract shipments will be speeded.



THE GETTELMAN SPEED PLOW, BUILT BY HEIL FOR SNOW REMOVAL



WELDED STEEL FABRIC



DOWEL CONTRACTION JOINT

Trusconize Roads & Streets for Permanency

Truscon Products for reinforcing concrete roads and streets add materially to their life and cut down maintenance expenses. There is a Truscon Product to meet every need for concrete road reinforcing and construction:

Truscon Welded Steel Fabric
binds the concrete into a crackproof unit mass that will withstand the onslaughts of time, traffic and the weather.

Truscon Dowel Contraction Joints
to provide a definite plane of weakness in the pavement that forms a straight, regular crack when the concrete slab expands or contracts.

Truscon Curb Bars
give additional life to the corners of slabs and curbs by preventing wearing and chipping.

Truscon Steel Road Forms
enable the contractor to give a speedier, cleaner job in less time and at lower cost.

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO

Factories at Youngstown and Los Angeles
Warehouses and Offices in Principal Cities

ROAD FORMS

CURB BARS

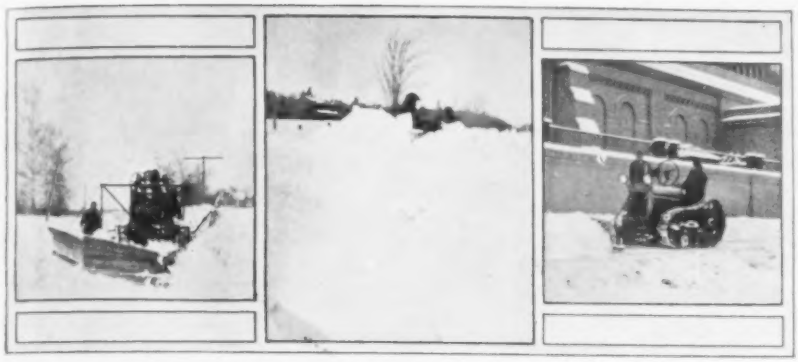
COMPLETE *Engineering Service* FOR ALL *Airport Requirements*

TRUSCON

See these products at the Road Show in Cleveland, January 9th to 13th at BOOTH AA-3

1903 — TWENTY-FIVE YEARS OF PIONEERING AND LEADERSHIP — 1925

STANDARD *Airplane Hangars* AND OTHER *Complete Buildings*



TRACKSON-FORDSON UNIT IN SNOW-REMOVAL SERVICE IN NEW ENGLAND AND NEW YORK

At left, cleaning up after a heavy New England snowstorm at Gardiner, Maine, with a heavy-duty model owned by the City Street Commission; center, Trackson-Fordson with a small wingless type snow-plow bucking its way through hard-packed drifts to open a way for motor travel; at right, unit equipped with Baker blade-plow cleaning up the streets of Buffalo, N. Y., after a snowstorm

Snow Removal with Light Tractors

Hundreds of communities in the United States and Canada have found the way to the "open-road" in winter by means of the Fordson equipped with Trackson Full-Crawlers, made by the Trackson Co., 518 Clinton Street, Milwaukee, Wis. In the New England States alone more than 350 of these units were purchased by 200 townships and municipalities in the fall of 1926 and used effectively as a solution of snow-removal problems.

Many of these Trackson-Fordsons were equipped with Sargent snow-plows made by the Union Iron Works, Bangor, Maine. They traversed the streets and highways in below-zero weather and in a short time after the heaviest snowstorm the way was cleared from drifts. For the average snow-removal job the 2-ton or standard Trackson-Fordson is used, but for plowing under unusually severe conditions, the heavy-duty Trackson-Full-Crawler, known as Model D, which converts the Fordson into a 3-ton crawler type with greater power and traction, has been developed. This model of the Trackson also affords greater crowding action at lower speeds than are possible with the 2-ton unit. The Union Iron Works has recently produced a heavy-duty model of the Sargent plow of all-steel construction which is especially designed for mounting on the Model D Trackson-Fordson.

The city of Gardner, Maine, owns a 2-ton as well as a 3-ton Trackson-Fordson. B. F. Jose, City Engineer, recently made the following statement regarding these units: "The plow and the tractor are perfectly balanced, and the satisfactory results obtained are astounding. I do not know what the capacity of the outfit is, but I know that we opened up without any difficulty drifts 4 feet deep, which left banks on the side of the road 7 and 8 feet high. For the work accomplished, I consider this snow-fighting equipment as the most economical and efficient on the market."

The Trackson-Fordson is made not only for use for snow-removal work, but for road construction and maintenance as well because of its adaptability. The 2-ton outfit and the heavy-duty units are both all-season machines. The former handles one-man graders, wheel and trail graders, drags, maintainers, etc., and the Model D has sufficient power traction to pull bigger graders and other road machines with blades from 7 to 10 feet, under difficult ground conditions.

When Are City Trucks Moving?

In order to make economical use of the motor-truck equipment of various city departments and good use of passenger cars provided for city officials, it is necessary to know just how much each is operating, and when. The Service Recorder Co., Hanna Building, Cleveland, Ohio, has developed the Servis Recorder, which tells the complete story. Every movement of the truck is recorded, as well as the idle time, in the form of a picture on a 24-hour chart.

This Recorder consists of a stylus which marks the chart. The stylus is mounted on a pendulum which is used solely to supply motion to the stylus. It swings constantly when the vehicle is in motion. The swing of the pendulum is limited by a bumper so that the stylus makes a uniform up-and-down stroke. A travel record of five minutes may be composed of hundreds of such strokes on the chart that merge together into a solid path. The winding disc serves two purposes—first, to wind the clock movement which is underneath, and, second, as a platform for the chart itself. When the chart is clamped down by the two clamping fingers of the winding disc, the chart turns at clock speed.

Among the cities which have recently equipped trucks and passenger cars with Servis Recorders in order to know how long and when they are in actual use, day or night, are Orlando, Fla., 29; Lakeland, Fla., 19; Asheville, N. C., 35; Durham, N. C., 12; Chicago, Ill., 64; and Knoxville, Tenn., 25.

Four Thousand New Concrete Lighting Standards

The village of Oak Park, Ill., Chicago's largest suburb and said to be the world's largest village, has recently awarded a contract for 4,000 American Joltite-Granlite concrete lighting standards to the American Concrete Products Co., Forest Park, Ill. The holes for the post foundations and the trenches dug for the cable have made this usually "immaculate city" show signs of being torn up, but the taxpayers are satisfied that their street-lighting program is progressing rapidly.

THE SERVIS RECORDER, SHOWING CHART AND METHOD OF SUPPORTING IT

RUSSELL
AT THE ROAD SHOW

The Russell Motor Patrols have introduced the greatest improvement in quality and efficiency developed in years.

Road Builders everywhere today realize the importance and economy of high grade equipment and Russell has always been a leader in bringing out better built road machinery.

As compared with horse graders Russell Motorized Graders will reduce the cost of operation and greatly increase the efficiency of road work.

The average horse drawn grader covers 6 to 7 miles of road one trip a day. The Russell Motor Patrols equipped with long blade - 10 to 12-ft. - will extend practically the entire width of the average road and easily cover 20 miles - better work and also cutting out all corrugations which is impossible with horse graders.

RUSSELL (BETTER BUILT) ROAD EQUIPMENT

Russell Motor Patrols are Built in Four Sizes—
No. 2 for Fordson tractor for power
No. 3 for 10-20 McCormick-Deering tractor for power
No. 4 for "Caterpillar" 2-ton tractor for power
No. 5 for "Cletrac" 20-K tractor for power
Scarifiers, Road Drags and Wheel Scrapers, Drag Lines, Conveyors
Gravel Screenings, Crushing and Loading Equipment, Etc.

RUSSELL GRADER MANUFACTURING COMPANY
Factory and General Offices—
MINNEAPOLIS, MINNESOTA
Representatives and Warehouses in all principal cities

ANNUAL 1928 ROAD SHOW AT CLEVELAND
Jan. 9-13 inclusive

TWO CLETRACS, MODEL 100, ON CARS AT THE CLEVELAND TRACTOR COMPANY'S LOADING PLATFORM READY FOR SHIPMENT TO ONONDAGA COUNTY, N. Y.
Rotary King snow-plows were attached to these tractors upon their arrival and they are being used this winter for snow removal

Speedy Dump-Trucks

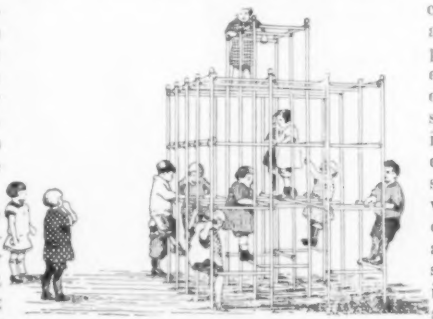
A few years ago there were only large motor trucks and consequently only heavy motor dump-trucks. The possibility for economy in the handling of loose materials was soon plainly evident and forced the consideration of many problems previously unthought of in this particular field of endeavor. For transporting large quantities of material over paved highways, a large motor dump-truck was, without doubt, the proper thing, but there were also many requirements for small quantities of materials to be transported on unpaved roads and in places where it would be impossible to use the larger truck.

Furthermore, the cost of these large pieces of equipment was sometimes prohibitive to communities with small or average budgets, and yet it was felt that the horse-drawn dump-wagon was a thing of the past. Having this in mind, the Wood Hydraulic Hoist and Body Co., Detroit, Mich., designed and built the fast-operating G-1 hoist, particularly adapted for use on light, high-speed pneumatic-tired trucks. In this combination, that highly desirable commodity, speed, is featured. Speed in the hoist is a companion to speed in the truck. The G-1 hoist dumps its load in from 4 to 6 seconds as compared to the ordinary hoist dumping time of 20 seconds. It is readily seen that over a period of time, 15 seconds saved on each dump means many more loads per hauling day. The accompanying illustrations show three separate installations of G-1 Wood hoists in International, Graham, and Chevrolet chassis.

Group Play Equipment for Recreation Centers and Schools

Group play without friction, safety for the youngest children, wholesome exercise for the whole body, and development of self-reliance are some of the features of the "Junglegym" of The Playground Equipment Co., 122 Greenwich Street, New York. This piece of equipment satisfies the deep-seated instinct for climbing and keeps the children from trees, fences, ladders and other things unsafe.

Since the average child gets but little opportunity to stretch out and hang the weight of the body from the arms, this play apparatus affords him an opportunity to develop a very important set of muscles of the upper body. Climbing prevents the relative under-development of the upper body, leading to weak arms, backs, shoulders and chests, to which so many children are prone. The use of this device also develops group coordination, stimulates physical courage and permits a large number of children to play in a small space without supervision. Regard for the rights of others, sportsmanship, initiative and courage are developed.



THE JUNGLEGYM

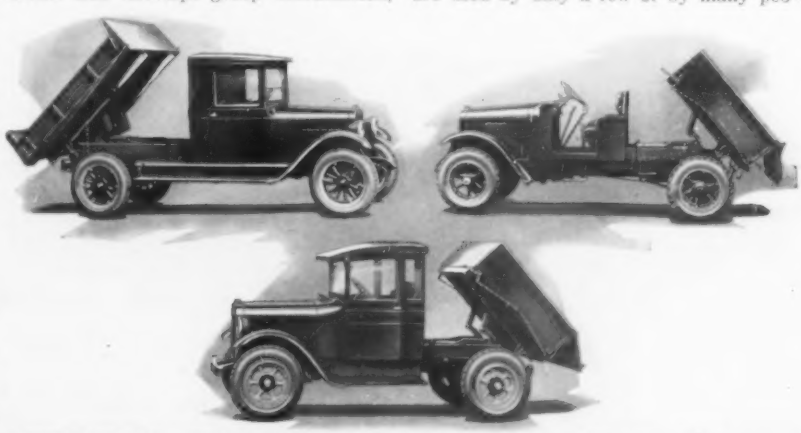
This equipment comes in several sizes. The "Junglegym Junior" in the photograph is built for children from 3 to 12 years. It is made of selected wood and is ideally suited for the kindergarten and primary day nurseries, private homes, and neighborhood groups. At least 15 children can play on it at the same time with entire safety. The ground space it occupies is 5 x 7 feet.

Over 1,000 units of this play equipment are in use throughout the United States, and no child has ever been hurt on them. The children obtain new and added delights from the device, inventing games of all descriptions. More than 100 games have been invented by the children at one famous school in the Middle West, to be played on the equipment. Children do not tire of it; it has that illusion of danger, without the reality, which fascinates them. It can be used either indoors or outdoors.

Purity in Municipal Swimming Pools

Wherever situated, and regardless of size, swimming pools, to be inviting and sanitary, must employ recirculation, which consists in the use of the same water over and over. With this principle, indoor pools need be drained only once in several months, and outdoor pools are not emptied during the entire swimming season. Only a small addition of fresh water is made daily to compensate for splash, evaporation, and other minor losses. In some states, the safeguarding of bathers with sanitary appliances already is mandatory, and other state boards of health are preparing regulations that will bring swimming pools under their control. When it is realized that many skin infections and communicable diseases can be contracted from unprotected pools, there is no reason why standards set forth for drinking water should not be demanded.

The use of filters, sterilizers, chlorinators and other equipment will afford the protection demanded by public health officials and doctors for pools, whether they are used by only a few or by many peo-



INTERNATIONAL, GRAHAM AND CHEVROLET TRUCKS EQUIPPED WITH WOOD HYDRAULIC HOISTS

INTERLOCK

Locks the BINDER **ASPHALT** to the SURFACE

Licensed under C. A. Mullen International Patents

INTERLOCK ASPHALT

TRADE MARK

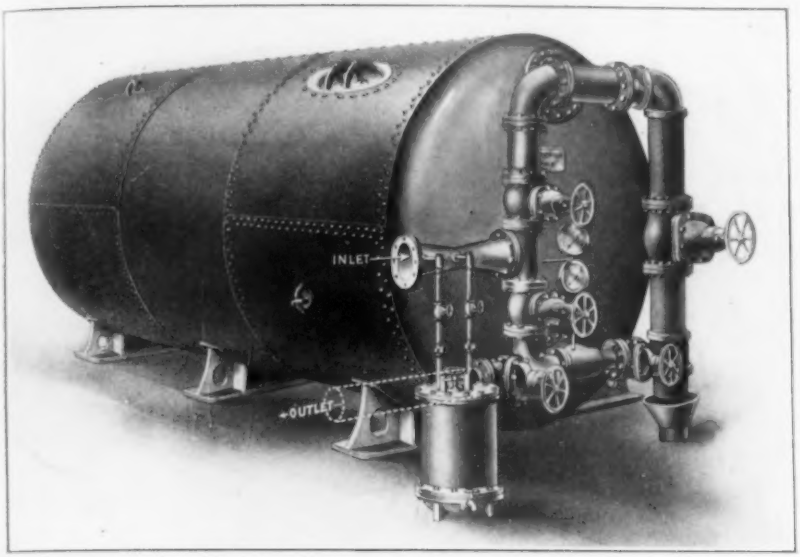
The Method that Stops "Waving" and "Checking"

By this method, a corrugated pattern is impressed on the lower course by a corrugated roller, giving an added compression by means of compressed-air tamping. A very dense asphaltic-concrete mixture underlayer can be used, as the top course has something to "key" to instead of simply raking on a porous surface. The top surface can be relatively thin, and is rolled in the usual manner. The result is a pavement that will not shove or roll under traffic. Full details on request. Equipment supplied to successful bidders wherever "Interlock" is specified.

This company is not in the contracting business.

INTERLOCK ASPHALT PAVING CORPORATION

250 WEST 57TH ST., NEW YORK



THE ROBERTS HORIZONTAL PRESSURE FILTER, MADE IN CAPACITIES FROM 210 TO 700 GALLONS PER MINUTE FOR LARGE OUTDOOR OR INDOOR POOLS

ple. The recirculation system and filters of the Roberts Filter Manufacturing Co., Darby, Pa., are designed to assure water purification. With recirculation, the water is drawn from the drain connection at the deep end of the swimming pool by a centrifugal pump and is returned through pressure filters to the shallow end of the pool. The filters of this company are of cast iron or steel construction. The cast iron filters are built in sections so that they can be taken through small doors or passageways to the point of erection and are made in sizes applicable to pools of 75,000 gallons capacity or less. Steel filters are built in both vertical and horizontal types; the plates are of mild tank steel, the dished heads of flange steel, and a factor of safety of four is utilized in computing thicknesses and methods of riveting. Manholes and handholes are conveniently located to permit access to their interior. Facilities are provided for distributing the incoming raw water uniformly over the filter bed. The filtering medium is selected silica sand, which is superimposed over a graded bed of hard filter gravel. The underdrainage system, which consists of a centrally located manifold with galvanized strainer pipes spaced 6 inches center to center, is designed to secure uniform withdrawal of filtered water and effective distribution of wash water.

A coagulator is furnished with each installation of these filters. The function of this apparatus is to dissolve and proportionately feed into the incoming raw water minute quantities of crystal ammonia alum, which, when combined with the impurities and suspended matter, coagulates them and forms a gelatinous mass on the upper surface of the filter beds, the operation being entirely automatic.

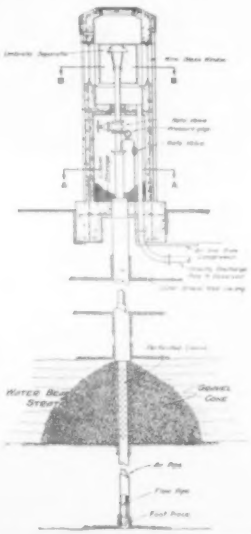
A hair catcher on the pump suction line arrests hair, lint and other foreign substances, which, if not removed from the water, in time will clog the pump and make effective washing of the filters more difficult. This device consists of a cylindrical bronze wire strainer contained within a heavy cast iron body. In the case of indoor pools, a heater is installed to insure comfortable bathing temperature. This can be equipped with an automatic temperature regulator, which, when set for any desired temperature, will maintain a specified degree constantly within a narrow range of variance.

Equipment for cleaning the walls and floors of all indoor tile-lined pools consists of a bronze cleaning tool having ports on either side of a stiff-bristled brush. Other fittings and connections manufactured by this company are of substantial construction and present an attractive appearance when set in place in either concrete or tile-lined pools.

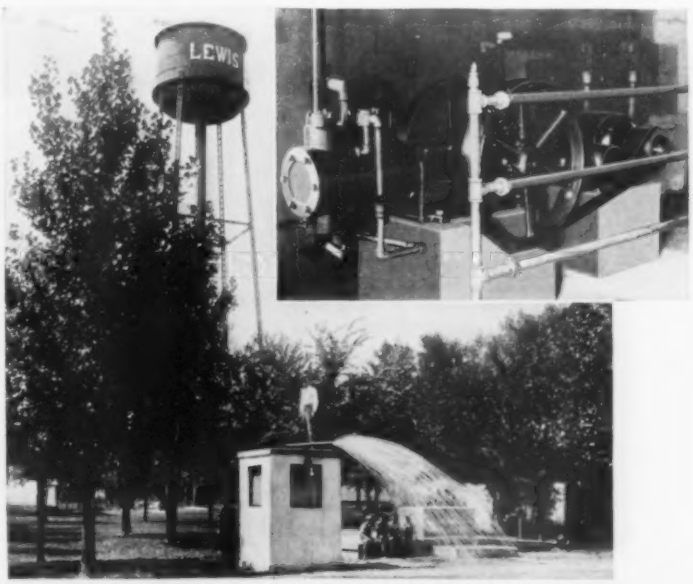
Wells and Lifts for Plenteous Water-Supply

Where water-supply lies in sand or silt strata, unusual means for obtaining a large and constant, yet economical, flow of water have to be taken. Where formerly it was a common experience for wells in such formations to slow up or go dry after comparatively short operation, engineers and geologists now know that this trouble is caused by sand packing around the well and shutting off the water flow into it, and have perfected means for preventing this condition.

Air-made wells manufactured by the Air-Made Well Co., 725 Herskowitz Building, Oklahoma City, Okla., and Sullivan air-lifts conquer these various sand troubles by pumping out the sand and replacing it with coarse gravel. The gravel acts as an effective barrier to prevent sand from clogging the screens, and increases the collection area for the water, so that an increased amount of water flows into the well. As the process of removing sand and inserting gravel is continuous throughout the life of the well,



A TYPICAL AIR-MADE WELL



THE AIR-MADE WELL INSTALLATION AT LEWIS, KANS., SHOWING FLOW FROM WELL AND SULLIVAN COMPRESSOR

PLUMBER & UTILITY PAVEMENT CUTS

The New A-B-C
Method
Of Repair

Takes The Place
Of The Old Way

The A-B-C Method is a permanent repair, made immediately following the fill, and eliminates red lights, barricades, liability and broken-down pavements.

WRITE FOR BULLETIN NUMBER 236

Stelzer Trench Cover used in connection with A-B-C Method

Asphalt Brick Company

5201-15 South 38th Street
St. Louis, Mo.

these wells have a tendency to increase in flow as time goes on.

The cross-section illustration gives a ready understanding of the process of this equipment. A sheath casing surrounding the regular well casing is driven down into the hardpan, effectively shutting off the sand until the well casing is placed, with the perforations located in the water-bearing strata. Perforations of sufficient size are provided to admit the sand freely but to hold back the gravel.

The air-lift footpiece is then installed in the well casing with a sealed well top and valves on the discharge and air piping. These permit air pressure to be placed on the columns of water in the well to reverse the flow out through the perforations in the screen. Gravel of selected size is set between the sheath casing and the well casing and held at a level above the bottom of the sheath. This sheath casing is then withdrawn gradually while back-flowing is employed to stir up and pump out the sand, at the same time forcing the gravel to take its place. In this way, a large bed of gravel is placed around the screen while the sheath casing is withdrawn to uncover the necessary amount of perforations to handle the flow.

After the well has been completed, a cement passage carries gravel to the space between the sheath and well casing, so that as the sand is removed by continuous pumping it is replaced by the gravel, and the entire bed is kept clean from sand by occasional back-blowing.

These wells are not only dependable and economical, but they are also ornamental. The concrete stand with plate-glass windows transforms them from merely good wells to beautiful fountains. The operator can tell at a glance, by looking through the window, just what each well is doing. The entire well head, being of concrete, steel and glass, is sanitary and practically indestructible.

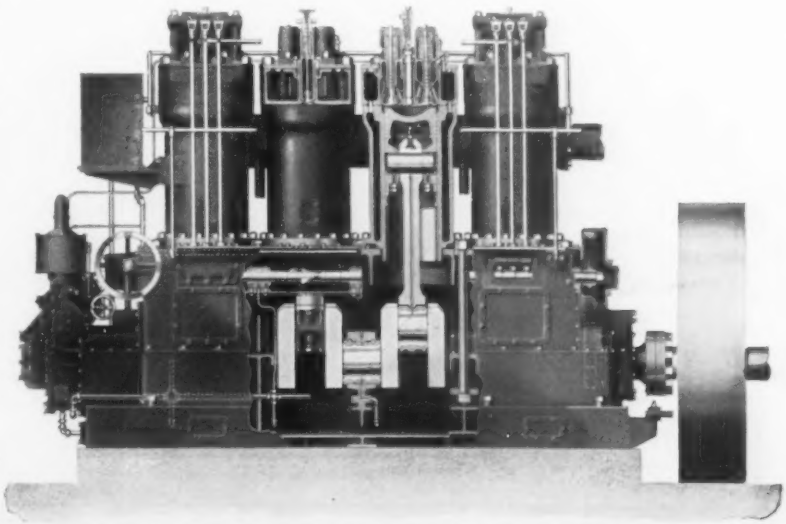
There are no working valves, plungers, impellers, bearings, pump rods, or other moving parts in the well to be worn or cut out by sand, since all these wells are pumped exclusively with the Sullivan air-lift pumping systems, made by the Sullivan Machinery Co., 162 South Michigan Avenue, Chicago, Ill. The air-lift system is made to order for each individual installation and fits exactly the conditions encountered to obtain the best results.

FLEET OF 4-CUBIC-YARD EAGLE DUMP-WAGONS OPERATED BY SYRACUSE, N. Y.

Four-Cycle Diesel Engines

Diesel engines that are built on the four-cycle principle with airless injection and that start cold, are now being marketed by the Superior Gas Engine Co., Springfield, Ohio, and the Otto Engine Works, Philadelphia, Pa., under the trade name Superior-Otto diesel engines. These diesel engines are built in sizes from 60 to 360 horsepower with one, two, three, four, or six cylinders, rated at 60 horsepower per cylinder. They are dependable and economical for electric light and power, ice and refrigeration plants, waterworks, drainage, hydraulic dredging, etc. Being of the slow-speed stationary type, built for heavy duty and continuous service over long periods, they insure low fuel consumption and low maintenance costs.

Simplification of design through airless injection of fuel into the cylinders increases the mechanical efficiency and reduces operating and maintenance costs according to the manufacturer. The less shock and smooth running resulting from medium compression as compared with high compression are stated by the manufacturers to be decidedly beneficial from an operating standpoint. This is made possible by four-cycle operation with its complete scavenging, which on the intake stroke completely fills the cylinder with fresh air. Under these conditions the moderate compression of 360 to 380 pounds raises the temperature at the end of the compression far above the ignition point of the heaviest fuel and insures instantaneous firing when starting cold, as well as dependable ignition when running. Each cylinder head is provided with a starting air-valve in a removable cage. An unusual feature is a hand wheel for locking the valve to its seat and raising the push-rod on the cam lever. This arrangement permits shutting off air from any cylinder during the starting operation, as well as locking the valve tight while the engine is in operation.



A TYPICAL SUPERIOR-OTTO DIESEL ENGINE FOR MUNICIPAL SERVICE

Horse-Drawn Wet Garbage Collection

For horse-drawn wet garbage collection, the Eagle Wagon Works, Auburn, N. Y., has designed a wagon made in 3- and 4-yard capacities. It has 4-inch tires on wheels which completely cut under the neck, and the wagon is dumped by means of a powerful under-body hand-operated hoist.

This equipment is furnished with or without metal covers, two on each side and one rear. It has a loading step on each side. Hooks for pails are at the rear of the wagon and it is complete in every respect.

The wagon used is the regular Eagle wagon with running-gear and front end, with steel fantail, watertight body, hand hoist and steps added. The body is 96 inches long and 60 inches wide.

New International Filter Company Representative in Kansas City

The International Filter Co., 333 West 25th Place, Chicago, Ill., has announced that its office at 314 Interstate Building, Kansas City, Mo., is now in charge of George W. Paulette, formerly Water-Works Superintendent at Emporia, Kansas. Mr. Paulette is a native of Kansas City, a graduate of Missouri University, and recently represented E. W. Bacharach & Co., in the municipal filtration field. His experience in engineering work while with Black & Veatch, consulting engineers in Kansas City, and his familiarity with filtration plants from the operating standpoint, enable him to be of service in this field.

THE WHY OF ASPHALT PAVING

Florida—the winter playground of America, and **New England**—the summer playground, have more asphalt than all other improved types.

The Thirteen Southern States have a combined mileage of asphalt greater than that of all other improved types of pavements on their Federal aid highway systems.

America's Twelve Largest Cities have for the past six years selected asphalt for **three-fourths** of their paving requirements.

Cuba selected asphalt for the seven-hundred-mile boulevard comprising the **world's largest highway** contract!

THE ANSWER

BECAUSE Asphalt is the most durable and economical, is dustless, waterproof, smooth riding, low in maintenance cost, restful and pleasing to the eye, free from detours.

Write for Information:

THE ASPHALT ASSOCIATION

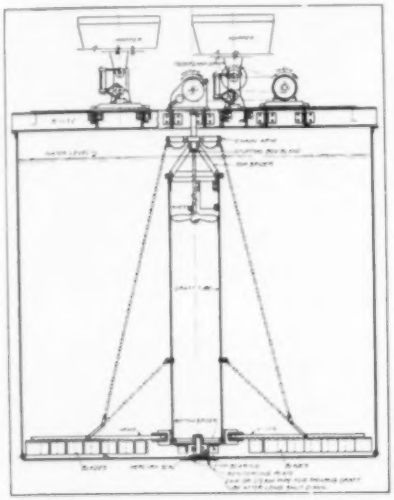
441 Lexington Avenue, New York, N. Y.

Albany, N. Y.
New Orleans, La.
Charlotte, N. C.
Washington, D. C.
Atlanta, Ga.
Chicago, Ill.
Toronto, Canada

An Impeller Agitator for Water Treatment

An impeller agitator designed to give the efficient mixing which is so important to chemical softening of hard waters and the chemical dosing of turbine waters, has been developed by the Dorr Co., 247 Park Avenue, New York. A feature of considerable importance is the ability of this agitator to turn over a large volume of water at a velocity which does not break up flocs.

The tank contents are circulated through a centrally located cylindrical draft tube in which a marine propeller is rotated. The draft tube, which revolves



THE NEW DORR AGITATOR IMPELLER FOR WATER-WORKS

slowly, is equipped at its lower end with a pair of radial arms with plow blades. The tank contents are given a general circulating movement in both the horizontal and the vertical planes, which results in a high rate of change of position of the various particles in the water being treated. The path of travel may be characterized as, first, upward through the draft tube; second, radially outward just below the surface; third, down through the annular space between the draft tube and tank; and fourth, radially inward to the base of the draft tube. It is the function of the slowly revolving rake arms to keep the bottom of the tank free from settled solids at all times and to serve as a means of moving such particles as do settle to a point under the draft tube where the sucking action of the propeller may elevate them to the surface and return them to circulation.

The draft tube and propeller is driven by a special two-speed reducer mounted on structural steel supports spanning the tank, the solid propeller shaft running within the hollow draft tube shaft. The entire mechanism is carried by the steel supports, a submerged bearing at the bottom of the tank simply serving as a guide. The propeller is of the standard marine type and is rotated at a relatively high speed compared with the draft tube. The radial arms are hinged to, and rotate with, the draft tube and are provided with chains so that they may be swung into a vertical position in case they become stalled in the settled solids after a shutdown with a full tank. The water to be treated enters through an opening in one side of the tank slightly below the surface and overflows through a similar opening diametrically opposite, but at the water-level. Mechanical feeders for adding lime, soda ash, ferrous sulphate, alum, etc., may be located conveniently on the supporting structure.

Turn-over, that is the time required to completely circulate the tank contents, may be varied to suit the particular requirements of each problem and usually ranges from one to eight minutes. The rate of turn-over is influenced by the speed, pitch and diameter of the propeller. Accordingly, by varying the diameter of the draft tube and the propeller characteristics, velocity also may be varied to suit the requirements of different types of treatment.

In addition to the water-works field, this agitator will probably find a wide application in plants where industrial wastes are treated chemically before sedimentation in mechanical clarifiers. Where exceptionally large volumes of water or waste are handled, several agitator mechanisms may be installed in a single large tank.

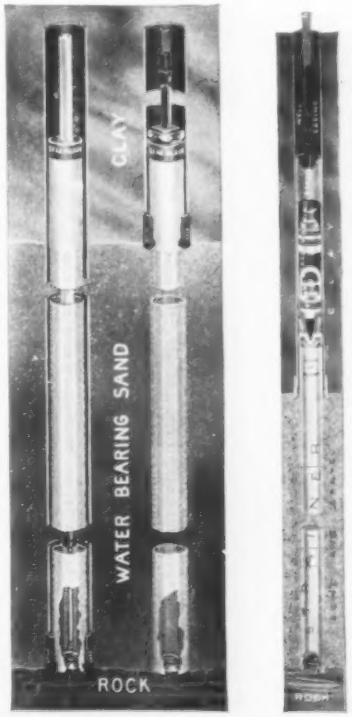
Installing a Tube Well System

The installation of a Cook tube well as handled by A. D. Cook, Inc., Lawrenceburg, Ind., is of interest to water-works officials using wells to tap underground sources of supply. The well casing with a drive shoe on its lower end is first sunk through the water-bearing sand and gravel to the point where the bottom of the strainer should rest. By means of a valve and strainer hood which hooks on the bail plug, the strainer is lowered to the bottom of the casing with a line of pipe or rods screwed to the hook. The length of the strainer is now marked on the rod sticking out of the well. Thus, if a 10-foot strainer is to be set, a mark should be made on the rod 10 feet above the top of the well casing. With the lower end of the rod resting on the plug of the strainer and the upper end projecting into the air, the casing is pulled back until the top reaches the mark on the rod. While pulling back, the rod should be watched to see that the strainer is not coming up with the casing. If the strainer sticks, a light tap with the rod will loosen it. After the bottom of the strainer is out of the casing, there is not much danger of its coming up. If directions are followed and measurements accurately made when the top of the casing has been pulled up to the mark on the rod, the strainer will be uncovered in the water-bearing stratum and the foot of blank at the top of the strainer and the lead packer will be up in the well casing. Should it be necessary to "bump pipe" when pulling back, the top rod should be removed while bumping and pulling back. After pulling a few feet, the drive cap should be taken off and the top rod replaced, checking to see that the strainer is not coming up with the casing.

The next step is to withdraw the valve and strainer hook. The swage block is lowered until its tapered end rests on the top of the lead packer. A few light blows with the bar on the swage block expand and press the lead packer against the inside of the casing, making a sand-proof joint between the well casing and the strainer. The well is now ready for the pump.

Since the well casing in a Cook system of tube wells is used as the pumping tubing, the driller should screw the joints tight. To install the pump, a rubber packer with a tapered brass tube attached is shoved down inside the lead packer of the strainer. By means of a blunt tool resting on a bar fastened crosswise in the brass tube of the rubber packer, it can be pressed into close contact with the lead packer.

A plain brass working barrel is then lowered into the rubber packer with a valve and strainer hook under the bail of the foot-valve, the valve having been forced tight into its seat in the taper in the bottom of the barrel. It is driven firmly into the rubber packer by using the swage block with the large end down. Thus a tight joint is made between the working barrel and the rubber packer, and thus the working barrel is fixed in position. The plunger valve is screwed to the pump rods and lowered into the well, completing the installation. All that remains is to cut the rods to length, preparatory to setting the deep-well pumphead.



STEPS IN SETTING A COOK STRAINER AND, AT RIGHT, INSTALLING THE PUMP

Kimball Made Advertising Manager

The American-LaFrance and Foamite Corporation, Elmira, N. Y., has announced that Norman F. Kimball has been appointed Manager of Advertising. Mr. Kimball's experience in the fire protection engineering field covers about fifteen years.

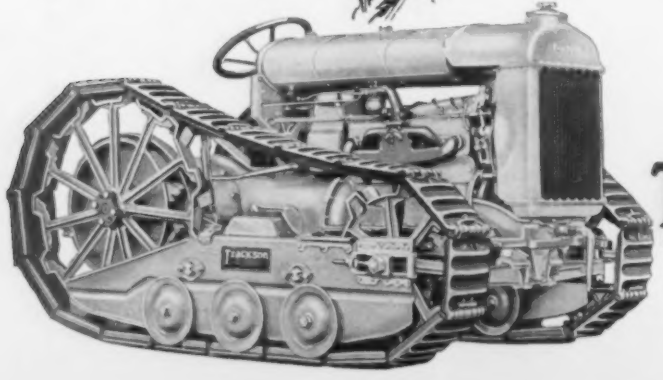
For Road Building, Maintenance and Construction Work

THE Trackson-Fordson has proven itself to be the most popular crawler tractor with road contractors and Road Officials throughout the country. It has demonstrated its ability as the most efficient and economical power for every purpose.

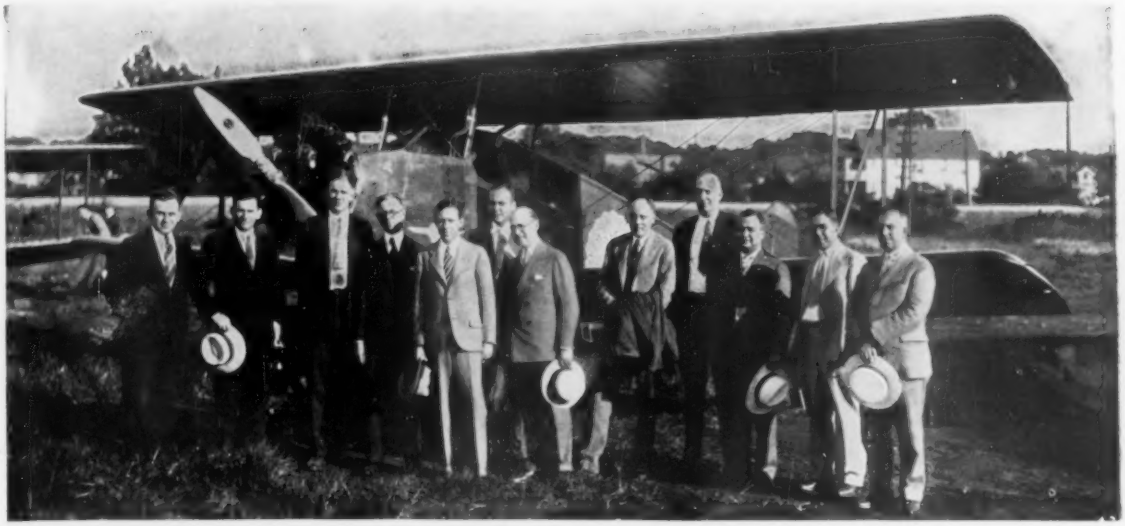
Trackson - Fordsons have proven that they will cut costs on road building and maintaining operations, such as ditching, shaping, plowing, back filling, grading, etc. Working under the most severe conditions, in water-soaked, muddy, swampy, sandy or loose soil, the Trackson with its sure-footed power will meet every emergency and is a brute for long hours and hard work.

Its low first cost, economical operation and maintenance, together with its general all around usefulness, makes Trackson-Fordson the ideal power unit for contracting and road building.

Write today for valuable road construction and contracting bulletin. It will be sent you FREE.



Trackson Company
MAKERS OF FULL-CRAWLERS
518 CLINTON ST. MILWAUKEE, WIS



AIRPLANE HELPS CITY OFFICIALS CONSUMMATE BIG STREET-LIGHTING DEAL

At eight o'clock of a Thursday morning a party of prominent Detroit business men took off from that city to Canton, Ohio. In a few hours they were discussing store and white-way lighting with W. A. Porterfield, Vice-President of the Union Metal Manufacturing Company of Canton. They next flew to Cleveland where at Nela Park, Ward Harrison and O. P. Haas, street-lighting experts, were consulted for their opinions with regard to white ways. Taking off again at 5:30 p. m., the Detroiters arrived in their city before dark. This trip brought to a climax a decision to put a new white-way system in Detroit's downtown. It also demonstrated the practicality of aviation for business purposes. Five men each saved themselves a day's time. They were Jay Grinnell, Harry Hogan, E. F. Wright, Z. Himelhock, C. F. Holderman, and E. L. Grimes

Pioneer to Represent Ahrens-Fox in Texas

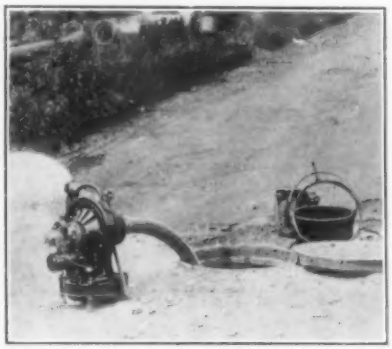
The Ahrens-Fox Fire Engine Co., Cincinnati, Ohio, has announced that the Pioneer Fire Equipment Co. of Dallas, Texas, will represent it in the sale of Ahrens-Fox equipment throughout the Southwest, comprising the states of Texas, Oklahoma, Arkansas, the western half of Louisiana, and possibly some territory adjacent thereto. The Pioneer Fire Equipment Co. is owned and controlled by J. Ed. Schmitz, Sr., and Ford A. Schmitz, who have been prominently identified with the fire apparatus business in the Southwest for many years. The office, showroom and service station of the Pioneer Fire Equipment Co. are located at 3600 Commerce Street, Dallas, Texas.

A 95-Pound Pumping Unit

A new portable centrifugal pumping unit, weighing 95 pounds, with a capacity of 7,500 gallons per hour has been developed by the Homelite Corporation, Port Chester, N. Y. This unit consists of a high-efficiency centrifugal pump with bronze open-type impeller direct-connected to a 1½-horsepower single-cylinder air-cooled motor operating on gasoline or kerosene.

The pump and engine are mounted on the same base, which also acts as a fuel-tank, holding one gallon—sufficient to operate the engine for four or five hours. The single shaft runs on oversize Norma Hoffman ball bearings. The pump suction and discharge are 2 inches in diamter. The lift of the pump is 20 feet; head, 45 feet. It will handle muddy, gritty water, oils, chemicals or anything that will pass through the foot valve strainer.

The engine is air-cooled and the outfit is independent of cooling water-supply and can be used even in the lowest temperatures.



THE HOMELITE PUMP UNWATERING A MANHOLE

The unit can be set anywhere without need for foundations, skids or blocking. Spring feet result in stability and absorption of vibration. The unit is especially adapted to unwatering excavations, pumping out cellars, manholes and sewers, filling tanks and boilers, handling oil and chemicals, irrigation, water-supply, bilge pumping on scows and barges, and fire protection.

Hazard's New York City Offices

The New York office of the Hazard Manufacturing Co., makers of electrical wires and cables, has been moved to Rooms 3008-3010, Transportation Building, 225 Broadway, New York. The New York office and warehouse of the Hazard Wire Rope Co., manufacturers of wire rope and wire rope fittings, now separate and distinct from the Hazard Manufacturing Co., will be retained at 533 Canal Street, New York.

A 5-TON MACK TRUCK WITH AUTO EDUCTOR BODY, 9 FEET LONG, 6 FEET WIDE, AND 34 INCHES DEEP, WITH A WATERTIGHT TAIL-GATE AND MANUAL CONTROL

The distance from the back of the cab to the front of the body is 33 inches to permit the mounting of the Eductor Pump and the Heil Hydro Hoist

"Having used Firestone Cord Tires for the last nine years on private cars and fire trucks in the city of Auburn, with territory the third largest in United States, we are convinced of their durability on Fire Apparatus. Our Pumpers are equipped with one set each of these tires, which have been in constant use for four years and we have had absolutely no tire trouble."

V. E. Cargion, Chief
Auburn Fire Department,
Auburn, Maine.

The Mark of Quality

Everywhere,

This Tire is Setting New Standards of Safety and Economy—

Fire chiefs all over the country are obtaining a new kind of tire performance from Firestone Gum-Dipped Tires. New records for long service are being established; greater safety and comfort than ever before are being experienced; and the maintenance of apparatus is being greatly reduced.

These are some of the advantages you gain in equipping with these tires, that are built of cords dipped in a rubber solution which saturates and insulates every fiber of every cord with rubber. Friction and wear in the carcass is minimized and the whole structure of the tire is given great strength. The Firestone Dealer in your locality is trained and equipped to give your department the complete service which enables you to get all the extra benefits out of these better tires. Call your dealer today, and find out how he is prepared to save you money and serve you better.

MOST MILES PER DOLLAR

Firestone

GUM-DIPPED TIRES

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER *Harvey S. Firestone*

A 3½-TON SCHACHT "ROAD MAKER" EQUIPPED WITH PNEUMATIC TIRES

A 2-Yard, 2-Batch Truck with 3½-Ton Capacity

A 2-yard, 2-batch truck, the Roadmaker, with a maximum carrying capacity of 3½ tons, has been put on the market by The LeBlond-Schacht Truck Co., Cincinnati, Ohio. It has a wheelbase of 132 inches and is equipped with an 8-foot dump-body, 6 inches wider at the rear, which permits the contents of the load to slide out easily without any manual effort when the body is elevated.

This Roadmaker is equipped with 36 x 6-inch pneumatic tires, duals in the rear, mounted on Budd disc wheels, which are not only conducive to faster vehicle speed under favorable operating conditions, but also provide increased traction when operating in mud. The number of days that the average dump-truck is compelled to be idle, due to unfavorable weather and road conditions, is reduced to a minimum, since this truck can operate almost as efficiently in soft mud as on hard city streets.

The maximum governed speed is 30 miles per hour. Complete equipment includes a St. Paul underbody hoist, 2-yard steel body with side boards and division gate, Crescent convertible cab, electric lights and starter.

A New Fire-Fighting Truck

A new deluge truck has recently been tested satisfactorily by the Chicago, Ill., Fire Department. It is a product of The White Co., Cleveland, Ohio, and was used on an old four-story brick building overlooking the river at Wacker Drive and Franklin Street. The building was to be razed, so firemen filled it with lumber and excelsior, sprinkled 250 gallons of gasoline over these materials and, when all hose lines had been laid, applied the torch. The flames were allowed to rage for several minutes until the building resembled a roaring furnace, before any water was thrown.

The two deluge turrets on the White truck were connected to the pumps on a fire-boat moored in the river. The two turrets combined have a capacity of 3,500 to 4,000 gallons per minute. Other apparatus used included two White squad trucks with standpipes and single turrets with a capacity of 1,500 gallons a minute each, and two aerial towers. The fire was extinguished within ten minutes after the water was turned on.

The new deluge truck, on a heavy-duty Model 55 chassis, has a 2¼-inch tip on one turret and a 2-inch tip on the other, with siamese connections for two 3½-inch and two 2½-inch hose lines to one turret and four 2½-inch lines to the other. It is intended for use in connection with four regular pumpers or two pumpers and a fire-boat, or with the fire-boat alone. It carries 1,200 feet of 3½-inch hose and 1,500 feet of 2½-inch hose. The truck has an enclosed cab which seats the entire crew of three men. In winter when streets are icy, hose lines with high-pressure nozzles are hard to control, but with the truck two high-pressure streams are easily played on any part of a burning building, either at close range or from a safe distance. If the truck is working close under a wall which seems in danger of falling, it may be driven back quickly, pulling its hose connections after it.

For Snow Removal and Excavating

Snow removal and excavating jobs are made simple with the use of the North hydraulic digger, developed by the W. M. Blair Manufacturing Co., 3673 Michigan Avenue, Chicago, Ill. This is a heavy-duty unit designed for use on the Fordson tractor, which is the source of power. The digger lifts its load by means of a hydraulic cylinder which in turn receives its oil pressure from a rotary gear pump driven direct from the Fordson power take-off. Every part is sturdily built to give continuous service on tough jobs. It offers a new unit in digging, loading, grading, backfilling, moving and handling snow and excavated materials. It is simple and rugged in construction, can be operated by anyone and has no clutches or brakes to get out of order. It is made in two models—high lift and low lift.

Municipalities and large companies with snow-removing problems are using it during the summer for all sorts of road and construction jobs, and in the winter for removing snow. Mounted on a Fordson equipped with rubber-tired wheels so that the unit may move quickly for long distances under its own power, this machine will load 300 to 500 yards of piled snow per day.

By means of a small hand lever mounted on the right-hand side of the dash, the operator has full control of the bucket. Raising, lowering or holding the bucket in any position is done by means of this control lever. The bucket is dumped by means of another lever, and is brought back to its locked position by being dropped to the ground. When the bucket reaches its extreme height and when it reaches its lowest position, it automatically stops.

The low-lift digger raises its load 42 inches and has a dumping clearance of 21 inches. This model is used for handling

NEW FIRE-FIGHTING TRUCK ON WHITE CHASSIS, USED BY THE CHICAGO FIRE DEPARTMENT

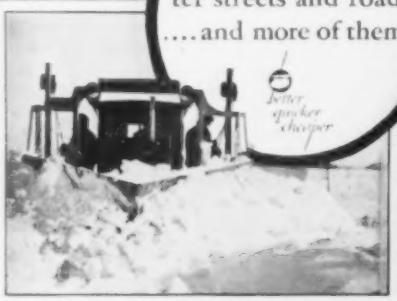
Your City can use a

"CATERPILLAR"

Tractor the year 'round

"Caterpillar" Tractors mean better streets and roads .... and more of them.

better quicker cheaper



JANUARY... *Roads Cleared of Snow*

FEBRUARY... *Garbage Cheaply Disposed*

MARCH... *Smooth Roads Early*

APRIL... *Scarified and Smoothed Streets*

MAY..... *Maintaining Parks and Golf Courses*

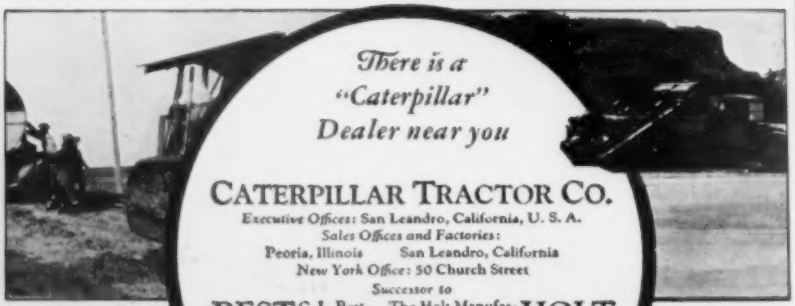
JUNE... *Clearing Rain-washed Debris*

JULY... *New Park Construction*

AUGUST... *Building Roadside Drains*

SEPTEMBER... *Pulling Down Hedges*

OCTOBER... *Building New Roads*



NOVEMBER

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CATERPILLAR TRACTOR CO.

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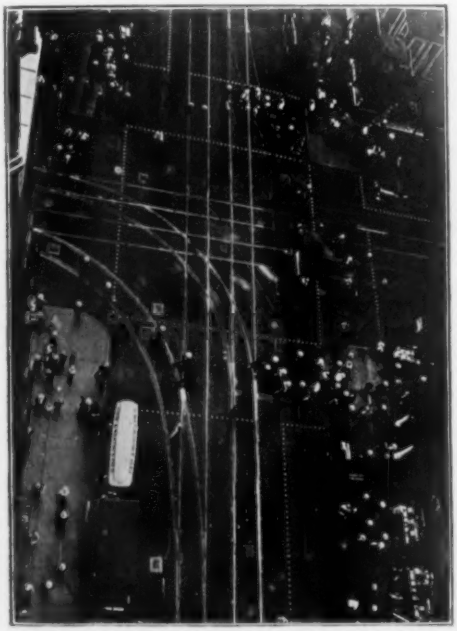
CATERPILLAR

REG. U.S. PAT. OFF.

NORTH HYDRAULIC DIGGER LOADING A DUMP TRUCK

bulk material, and it will pick up its load, transport the load 100 feet and handle at least 15 to 20 yards per hour. The high-lift digger, mounted on the standard Fordson with rubber-tired wheels, raises its load 90 inches and has a dumping clearance of 76 inches. The standard bucket capacity is 1-3-yard. The high-lift model is also mounted on the Fordson with Model F or Model D Trackson crawlers, or on H. P. Rigid Rail track.



METAL TRAFFIC MARKERS AT CLARK AND MADISON STREETS, CHICAGO, ILL.

Bull-Fight Puts Mexico City on Equal Footing with Chicago in Traffic-Marking Equipment

Mexico City recently found herself losing place among the capitals of the world and other North American cities, in the matter of expediting traffic movement, and at the same time handicapped for funds to install the equipment judged essential for overcoming the deficiency. City officials conceived the idea of staging a big festival and bull-fight to raise the money. Accordingly, a characteristic fiesta was held on August 28, 1927, and shortly thereafter Monel metal traffic markers were installed. These were supplied by the Metal Traffic Marker Corporation, 67 Wall Street, New York, sole manufacturers, and were used to lay out a series of permanent silver-like guide lines which serve as traffic lanes and safety zones throughout the business sections of the city.

Thus Mexico City has taken her place with the growing number of cities in the United States, and with numerous highway departments, that now control motorist and pedestrian traffic by the use of metal markers. For the Chicago installation, here illustrated, it was not necessary to resort to a bull-fight, but the satisfaction expressed with the results is as great as in Mexico City. To quote from the recent letter from Thomas H. Byrne, Superintendent of Streets, Chicago, to the manufacturer: "The immediate change in the habits of pedestrians where the markers were installed as crosswalk lines was visibly pronounced, and the observance by motor-vehicle drivers was remarkable. The marking has done a great deal toward traffic improvement in our city and we have been the recipients of a great deal of favorable comment on the subject." The same officer comments favorably on the ease of installation, and the high visibility of the markers in all weather.

Thoroughly Compacted Black Base Construction

Under the trade name "Interlock Asphalt," the Interlock Asphalt Pavement Corporation, 250 West 57th Street, New York, is prepared to supervise the construction of a new type of asphalt pavement which is claimed to have several desirable features.

This new company, which will promote the C. A. Mullen patents in the United States, is headed by A. Reginald von Keller. The patented feature of the pavement consists of a uniform predetermined pattern which is impressed on the base course, allowing the use of a dense, asphaltic concrete type mixture, owing to the fact that the pattern gives the top course a distinct key, instead of relying on the porous surface, as in the ordinary pavements, for the bond. The pattern is impressed by a small, narrow, corrugated roller mounted on a bridge which spans the pavement. This roller, plus the tamping air-gun mounted on it, produces a saw-tooth section, as shown in the illustration. Any inequalities in raking are shown up immediately by this roller instead of being "bridged" as with a wide steam roller, and the compression is much greater owing to the tamping action of the air-gun.

The upper course is relatively thin and consists of a thin asphalt or stone-filled sheet asphalt mixture raked over the under course and rolled in the usual manner.

A Pipe Thawing Generator Set

In the colder portions of the northern section of the United States and in Canada, frost frequently penetrates to such depths that house services and sometimes water-mains are frozen. The most satisfactory method of thawing services and mains has been found to be by the use of electricity. The Engesser Electric Manufacturing Co., Inc., Watertown, N. Y., has developed a thawing machine which is a complete, self-contained unit, especially designed for thawing underground service pipes. This unit generates its own power, requiring no outside electrical connection or electricians for operating.

Power is derived from an engine assembled from standard Ford parts carefully fitted so that the engine is capable of delivering its full load. The electric generator is especially designed for pipe-thawing service. It is of the alternating-current type, which is most suitable for this class of work. It is fitted with a field

SECTION OF INTERLOCK ASPHALT PAVEMENT DESCRIBED ABOVE
The sawtooth projections of the base course slightly outlined, are 1½ inches center to center

What Will It Cost Us *Next* Year?

The longer life—the smaller operating expense—the exceptionally low depreciation of Standard Speed Wagons are things that you can fully appreciate only through Speed Wagon ownership. Thousands of Speed Wagon users all over the country have told us this.

Today, try out a Standard Speed Wagon for yourself. You can match its 6-cylinder agility against ordinary trucks and see how much better the Standard Speed Wagon is equipped to cope with modern traffic. You can test the superior safety of the Standard's 4-wheel brakes—the easy handling and cab comfort that keep drivers efficient. You can examine the extra chassis staunchness that resists roughest usage. And the performance of the Standard Speed Wagon today is a guarantee of what it will do—and how little it will cost—next year, and for many years beyond.

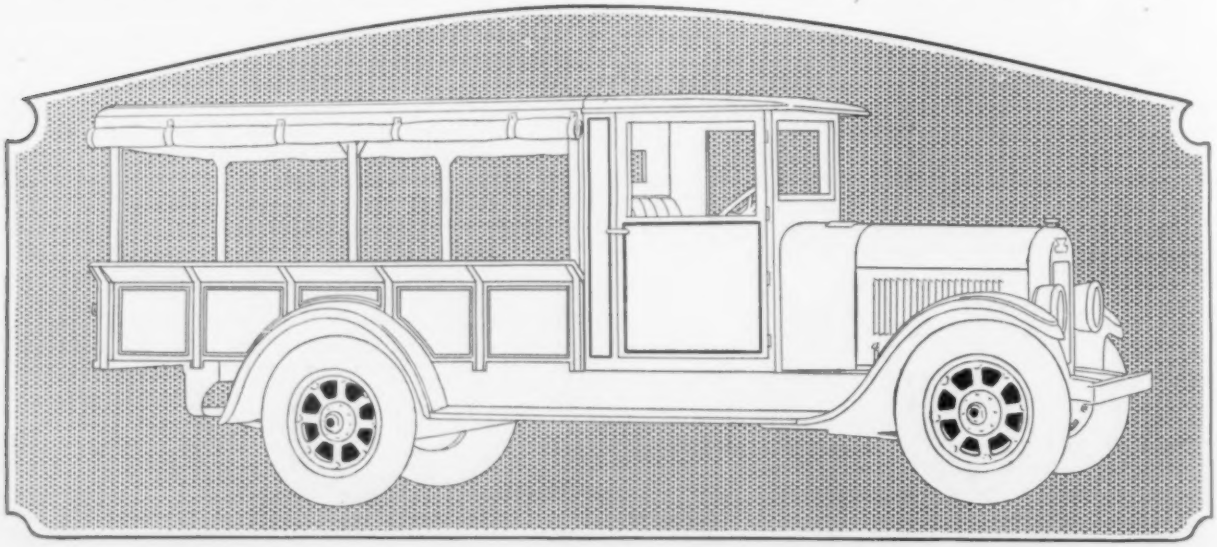
A Speed Wagon For Every Trucking Need

JUNIOR	MASTER
Capacity up to one-half ton, Chassis $895	Capacity up to two tons, Chassis $1645
STANDARD	HEAVY DUTY
Capacity up to a ton and a half. In two wheelbases, at $1345 and $1445	Capacity up to three tons, Chassis $2185. Special Dual Internal Brakes

Prices at Lansing

Be sure to try one out.

REO MOTOR CAR COMPANY
Lansing, Michigan

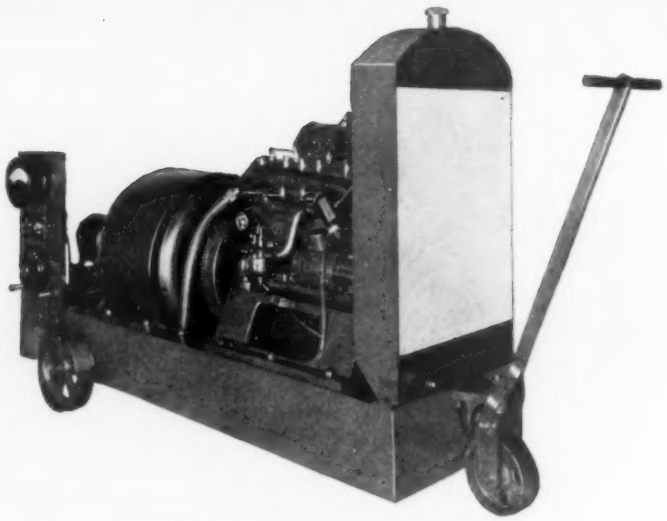


6 Cylinder **4 Wheel Brakes**

SPEED WAGON

Coupe Cab

for faster, surer, easier, cheaper hauling



THE ENGESSER ELECTRIC THAWING UNIT

rheostat to control the current and also an ammeter which indicates the amount of current flowing in the circuit. The complete unit is assembled on a welded channel iron base which is mounted on three wheels, giving it three-point suspension, eliminating any binding of bearings when not setting level. It also makes it convenient for loading and unloading when a truck is used for other purposes.

It has been found that a ¾-inch pipe, 300 feet long, can be thawed in from 3 to 10 minutes with 250 amperes; 1-inch pipe, 250 feet long, in 5 to 15 minutes with 300 amperes; a 1½-inch pipe, 200 feet long, in 10 to 20 minutes with 350 amperes; a 2-inch pipe, 150 feet long, in 15 to 30 minutes with 400 amperes; and a 3-inch pipe, 100 feet long, in 30 to 60 minutes with 500 amperes.

The cost of operating this set on a basis of thawing 50 service pipes per season is: interest on investment, $72; use of truck at 15 cents per mile, $15; gas and oil, $3.50; labor, two department men, $60; a total of $150.50, making an average cost of $3.01 per service. The machine weighs 1,800 pounds, takes up a space 6 x 2½ feet, and is only 4 feet high. The necessary clamps and two 100-foot lengths of cable are furnished with the machine for connecting.

Among the users of these machines are Watertown, N. Y.; Gloversville, N. Y.; Kittery, Maine; Portland, Maine; Chicopee, Mass.; Fitchburg, Mass.; Leominster, Mass.; Quincy, Mass.; Iron Mountain, Mich.; St. Cloud, Minn.; Manchester, N. H.; Rochester, N. H.; Hazelton, Pa.; Wilkes-Barre, Pa.; Barre, Vt.; Burlington, Vt.; and Montreal, Canada.

Water Purification Costs Lowered

The Bureau of Water, Philadelphia, Pa., has aided in the development of cleaning machinery for sand filters. Nearly one-half of the city's 118 slow sand filters are operated under the Blaisdell system, in which the clogged filters are virtually vacuum-cleaned by 8,000-pound tractors operating on the sand surface in 18 inches of applied water.

At the Torresdale plant 65, at the Belmont plant 18, and at the Roxborough 8, fine sand filters of 0.735 acres each are renovated by the Blaisdell tractors, which remove clogging matter that has penetrated in some cases far below the 12-inch teeth of the cleaner. The principles of the Blaisdell cleaner are new in many respects, and surprising results are accomplished. Blaisdell found a way to apply the mechanical filter backwash with real mechanical agitation added to what has been called slow sand filters. The tractor is unique in many ways. It is the track-laying type, running on 27-inch-wide rubber belts. The 8,000-pound weight of the machine is spread so that there is less than 2 pounds per square inch pressure on the sand surface. Owing to the slimy mud in which it operates, it is necessary to drive the wheels on all four corners.

The tractor pushes a suction caisson which slides on the muddy sand surface. Six stirrer-heads revolve in the sand, and from the ends of the hollow teeth of the stirrer-heads 40 gallons of water per minute are ejected into the sand. This water is pumped from the water standing on the sand and in which the tractor operates.

Mechanical agitation and turbulent water scrub the clogging matter from the sand. A total of 240 gallons per minute of muddy, sandy water is pumped from the suction caisson to waste through a 3-inch hose at the head of the tractor. The excess over the 40 gallons injected is sucked through the stirrer-heads and up into the mixing chamber of the caisson. In the caisson the turbulence of the water is stopped, the sand is dropped back onto the sand bed of the filter, classifying as it settles. The muddy water relieved of the sand is sucked to waste, leaving the sand bed clean of the clogging matter.

The sand is cleaned in 1/15-minute, as the suction cleaner travels over the filter surface at a speed of 15 feet per minute, cleaning a swath 80 inches wide. Filter sand washing costs have been reduced, according to the manufacturers, to less than 6 cents per cubic yard. This direct charge spread over the yield of the filter averages less than 50 cents per million gallons.

At Philadelphia, immediately after cleaning, rates of 6,000,000 gallons per acre daily are maintained with complete removal of turbidity and an average of over 98 per cent removal of bacteria. These rates are at present limited by the size of the mains.

Filtration plants are operating with the Blaisdell system of sand washing at Wilmington, Del., Philadelphia and Lancaster, Pa., at the Eastman Kodak Co.'s Rochester, N. Y., plant, Calexico and El Centro, Calif., Yuma, Ariz., and Montreal, Canada. The system is applicable to any fine sand filter without change of any sort other than to make the entrance wide enough to allow the passage of the 80-inch-wide suction caissons. This cleaning unit is manufactured by the Blaisdell Filtration Co., S. E. corner 20th and Indiana Ave., Philadelphia, Pa.

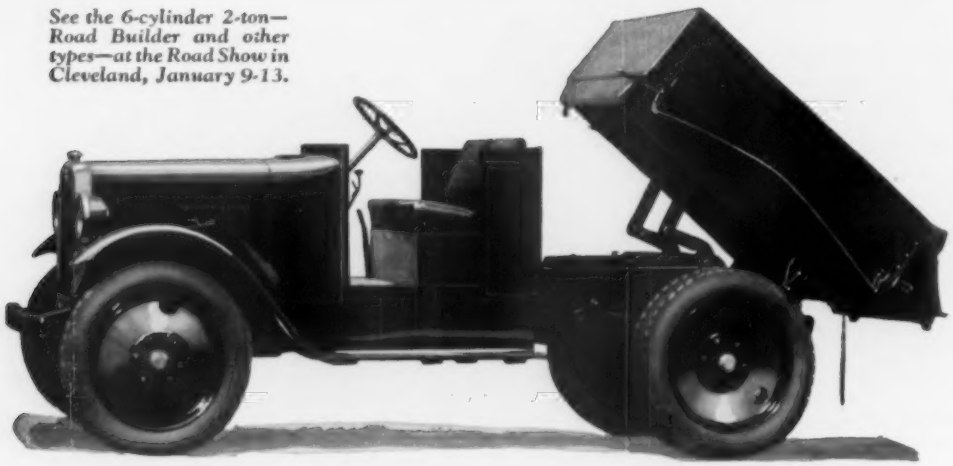
A Labor-Saving Shoulder Maintenance Unit

A fine strip of portland cement pavement or of asphaltic concrete pavement is all very well for traffic, but vehicles are

THE BLAISDELL SUCTION FILTER-SAND WASHER

See the NEW 6 CYLINDER 2-TON ROAD BUILDER

See the 6-cylinder 2-ton—Road Builder and other types—at the Road Show in Cleveland, January 9-13.



Power and speed made usable to the maximum degree .... Ruggedness and dependability that mean staying on the job .... Price so low that equipment capital is released for other work .... That is the new Graham Brothers Road Builder.

Six cylinder engine .... 4-speed transmission (a low low for exceptional pulling) .... 4-wheel brakes (Lockheed Hydraulic) .... a chassis designed especially for the demands of 2-Ton dump truck work.

Your local Dodge Brothers dealer will gladly show you this money maker.

$1645

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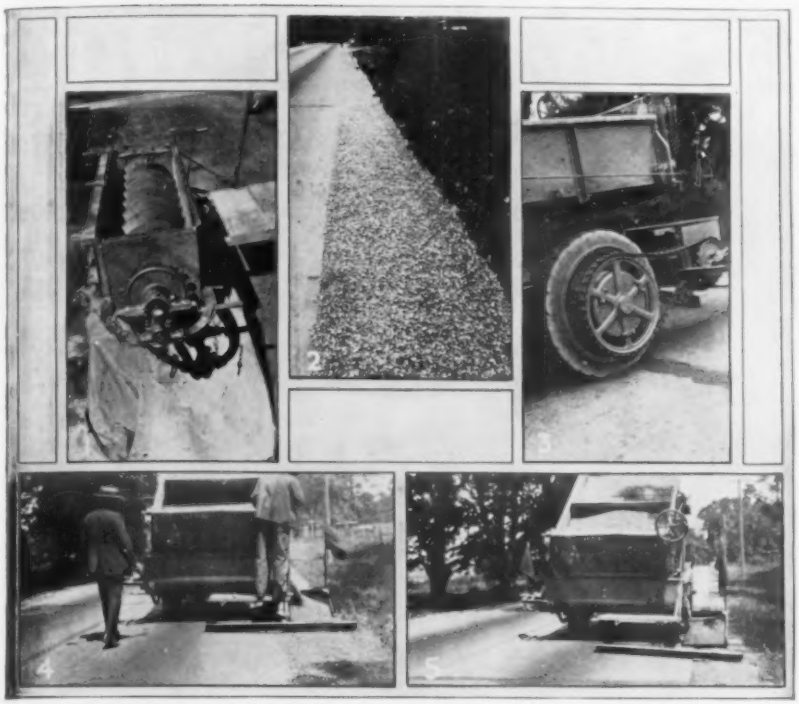
GRAHAM BROTHERS TRUCKS

Sold and Serviced by Dodge Brothers Dealers Everywhere

Built by Truck Division of Dodge Brothers, Inc.



THE BARBAZON SHOULDER MAINTAINER AND ITS WORK

1. The distributor unit showing spiral conveyor. 2. A shoulder immediately after graveling with the maintainer. 3. Method of driving spiral conveyor. 4. The conveyor in action, showing flow of material from conveyor and method of spreading on shoulder. 5. The shoulder maintainer showing control wheel

bound to be forced to the edge and onto the shoulder from time to time. If the shoulder is not maintained in good condition, great damage to both motor vehicles and pavement edge is bound to result. The Brabazon Manufacturing Co., Stoughton, Wis., has developed a shoulder maintenance machine which should be of great interest to state and county highway officials and to contractors. This machine is easily attached to 80 per cent of the present motor dump-trucks in use, preferably to dump-trucks of from 2½ to 5 yards capacities, and when attached forms a rigid unit.

The Brabazon shoulder maintenance machine is attached at the rear of the dump-truck, mounted across the rear of the frame by an 8-inch mounting channel, by three heavy U-bolts clamped over the frame. No holes are drilled into the truck frame for mounting and the machine can be easily attached in 15 minutes, leaving the truck free for other use, thereby not tying up the equipment.

The machine is power-driven from the left rear wheel by a cast steel sprocket wheel, especially designed for this purpose. The inner footing of the sprocket bolts to the truck wheel, and power is transmitted through a heavy-duty pin and cotter type drive chain to a driven sprocket gear which drives the conveyer through a special clutch.

The 16-inch double spiral screw conveyor, which is contained in a steel conveyor body, carries the materials which flow from the truck and discharges them into a distributor chute on the right side of the truck. When this chute is properly adjusted, it spreads the material to the desired width to fill the shoulder. Coupled to a draw-bar on the rear of the machine is a leveling blade weighing 71 pounds. This partially projects over the shoulder and levels all material even with the roadway. Since it is at a slight angle, it brings in the material to the roadway so that there is no space between the shoulder and the roadway proper. Surplus material is carried to the outer point.

The supply of materials is under the control of the operator at all times and he is able to furnish more or less material as is required by the fill on the shoulder, as the operator has a full view of the shoulder ahead and can make adjustments in ample time. A large hand wheel close to the operator governs the flow of material under the tail-gate into the conveyor body and to the conveyor screw.

The distributor chute has a six-way movement and adjusts itself to any unevenness in the shoulder, and also weaves in and out along the edge of the road to take care of any variation in the path of the truck, by means of a tracer blade which is bolted on the inside of the chute and a tension spring that brings the chute back to its inner position.

As the truck with the maintainer operates at all times on the right-hand side of the roadway, it does not interfere with traffic. The extreme width of the machine is protected by placing flag sockets on each side to carry the highway safety flags as required by some states.

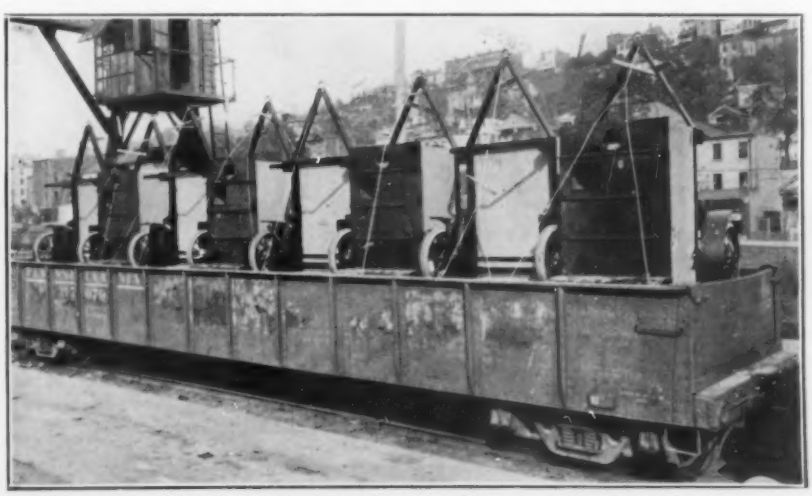
Electro-Chemical Plant at Tacoma, Wash.

The Pennsylvania Salt Manufacturing Co., Philadelphia, Pa., which holds all the capital stock of the Tacoma Electro-Chemical Co., has announced that the Tacoma Company has secured a large plot of ground within the limits of the city of Tacoma where it will erect a plant to produce liquid chlorine, caustic soda and, later, other items. Preliminary plans have been made and, after revision, construction work will be rushed. It is expected that the plant will be in operation in the current year.

Large Tar and Asphalt Heater Order for Texas

The last carload of what is believed to be the largest single order ever placed for tar and asphalt heaters was recently shipped by Littleford Bros., 500 East Pearl Street, Cincinnati, Ohio, to the state of Texas.

This order was received from the State Highway Department of Texas and called for a lot of 50 Trail-O-Heaters, each having a capacity of 300 gallons, and each equipped with a hand spraying attachment. This equipment is to be used for the maintenance of roads throughout the state. The transaction was handled through the Browning-Ferris Machinery Co., Littleford distributors for Texas.



LAST CARLOAD OF BIG ORDER FOR ASPHALT HEATERS LEAVING THE LITTLEFORD PLANT FOR TEXAS

SHOULDER MAINTENANCE

STATISTICS SHOW

IS EXPENSIVE WITH MOST METHODS NOW IN USE

SPEED - ECONOMY

with materials mechanically applied the MODERN WAY

ONE-MAN operation, plus Truck Speed of FIVE MILES per hour, plus CONTINUOUS operation. Compared with other present methods, what are

THE RESULTS?—THE

BRABAZON SHOULDER MAINTENANCE MACHINE

will give you savings of from SIXTY to ONE HUNDRED DOLLARS per day. Can you afford to be without this machine at such savings?

Made to attach on your present motor dump truck. Easily attached. Quickly detached.

Write for information

MAKE YOUR GOOD ROADS SAFER

BRABAZON MANUFACTURING CO.

STOUGHTON WISCONSIN

HIGHWAY TRAILERS

SAVE $100,000 & MORE DURING 1928

Highway Trailers will help many cities save $100,000.00 and more during 1928

Some cities are saving five to ten times that much since the installation of Highway Trailers and the Highway Method of Garbage, Ash and Rubbish Collection.

The amount of savings which can be effected will depend on the size of your City and your present method of collection.

WRITE US FOR SPECIAL LITERATURE

HIGHWAY TRAILER COMPANY Edgerton, Wisconsin

THE WORLD'S LARGEST TRAILER PLANT